Safety Maintenance and Production

EST. 1901 AMERICA'S PIONEER MAGAZINE IN ITS FIELD

FIFTY CENTS AUGUST, 1954

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(For details, use Key # U-1 on card on page 73)

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(For details, use # U-3 on card on page 73)

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Cleveland, Ohio *Sept. 14–16*

Sixteenth Annual Ohio State Safety Conference & Exhibit (Hotel Carter). Carl L. Smith, Executive Secretary, 2073 E. 9th St., Cleveland 15, Ohio.

York Harbor, Maine *Sept. 16–17*

Twenty-seventh Annual Maine State Safety Conference. (Marshall House). A. F. Minchin, Secretary, Industrial Safety Division, Dept. of Labor and Industry, Augusta, Me.

Chicago, Ill. *Oct. 18–22*

Forty-Second Annual National Safety Congress and Exposition (Conrad Hilton Hotel). R. L. Forney, General Secretary, National Safety Council, 425 N. Michigan Ave., Chicago 11, Ill.

Atlantic City, N. J. *Nov. 6–11*

First Annual Eastern Sanitary Supply Group Trade Show and Convention (Hotel Ambassador). William F. Plowfield, Executive Director, 4 S. 15th St., Philadelphia 2, Pa.

Portland, Oregon *Nov. 18–19*

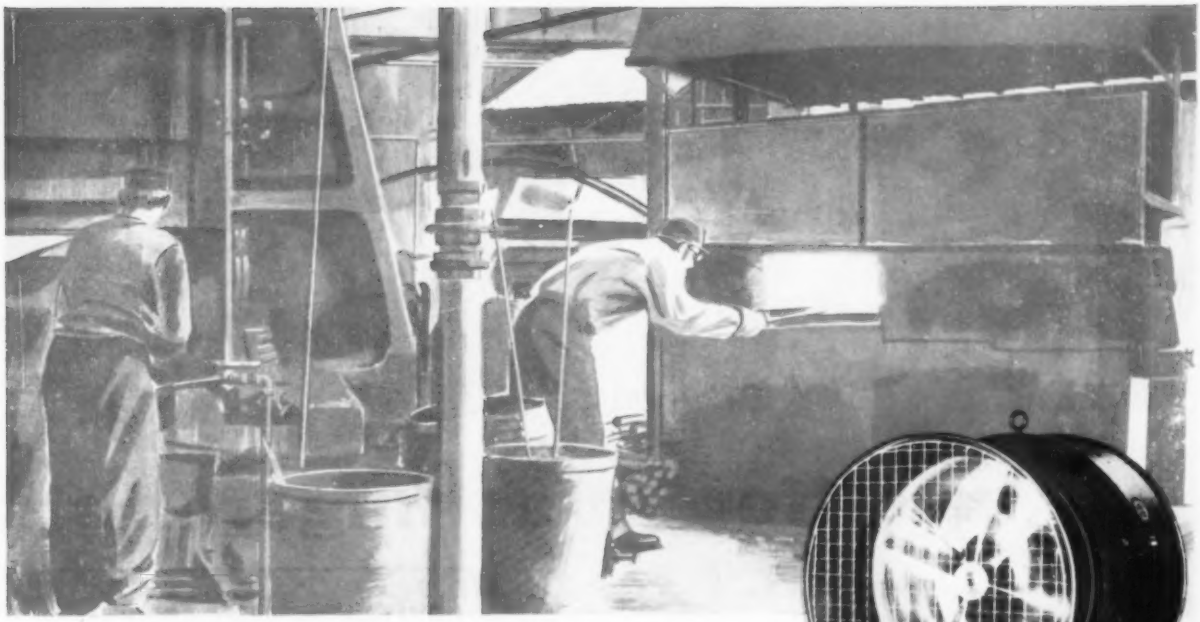
Governor's Sixth Annual Industrial Safety Conference (Masonic Temple). Leonard A. Weston, Director, Accident Prevention Division, State Industrial Accident Commission, Public Service Bldg., Salem, Oregon.

Chicago, Ill. *Jan. 24–27*

Sixth National Plant Maintenance and Engineering Show (International Amphitheatre). Clapp & Poliak, Inc., Show Management, 341 Madison Ave., New York 17, N. Y.

Chicago, Ill. *May 16–20*

Materials Handling Exposition (International Amphitheatre). Clapp & Poliak, Inc., 341 Madison Ave., New York 17, N. Y.



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COMPANY .....

ADDRESS .....

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(Write here any special ventilating problem you may have.)

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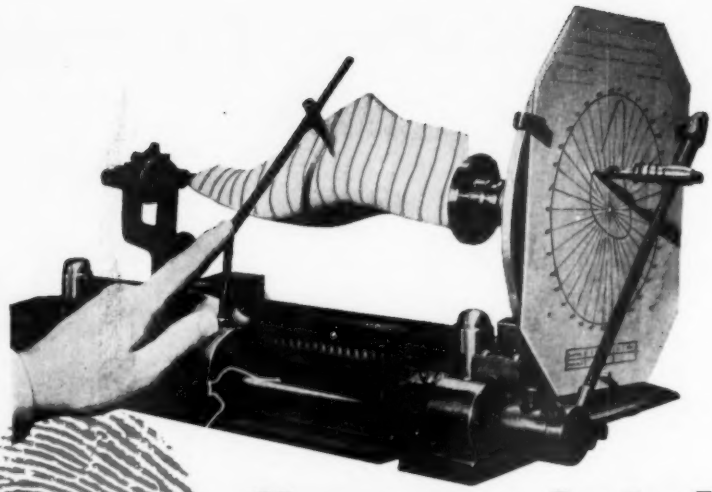
feet



are as different as fingerprints!

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built over special lasts that are Contour-Measured to 1/100th-inch at 19 points instead of the usual 4!

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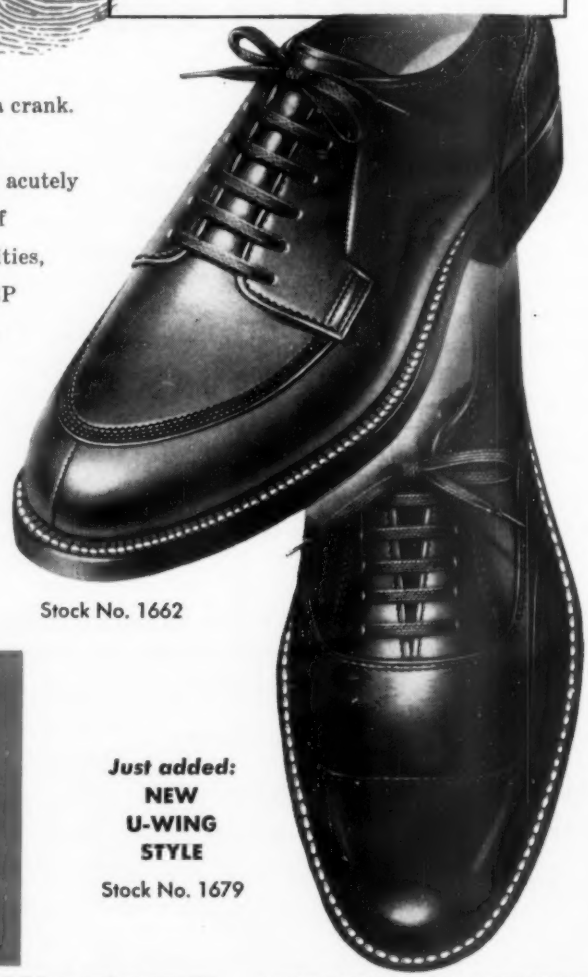

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By courtesy of: Kaiser Steel Corporation

AMERICA'S PIONEER MAGAZINE IN ITS FIELD

SAFETY MAINTENANCE & PRODUCTION is indexed regularly by Engineering Index, Inc., New York

It's Safe to Say

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★ NOW IT CAN BE TOLD

IN THE May issue of SAFETY MAINTENANCE we published an article, "Were They Better in the Good Old Days?". If we reprinted all the comments, both pro and anti, received to date, those letters to the editor would fill half the magazine and there would be little or no room for feature articles.

Now it can be revealed that publication of the original article was pre-arranged and was written by John A. Quesal after consultation with our editorial board. By no stretch of the imagination can the idea be considered a hoax but rather as a deliberate means of stimulating friendly controversy and paying long-delayed tribute to those pioneers and deans of accident prevention who first blazed the trail to safety.

Contrary to popular belief, age in itself or long experience does not connote automatic wisdom. But the article was planned and especially prepared to demonstrate that newcomers into the field of safety have no monopoly on achievement or accident prevention accomplishments. The use of Mr. Quesal's material was designed as a psychological "gimmick" since psychology is one of the many present-day approaches to safety. Even before publication it was agreed that any comparison of old with new safety procedures would stimulate thought-provoking reaction. In other words, we set out to arouse readers to possible self-analysis by which all accident preventionists, regardless of age or experience, could benefit. Those indifferent to comparisons perhaps are in a rut. But if temperatures flared up, self-appraisal would result.

World War II gave great impetus to accident prevention in all industrial plants. Operations feverishly engaged in turning out masses of war materiel soon learned the bitter lesson that accidents jeopardized production at a crucial period in our nation's life. New safety leaders entered the field in droves and the great majority of those men performed feats which would have exhausted the old-timers. New processes and new procedures brought in their wake new hazards and consequently young blood was needed in the safety movement just as it was on far-flung battlefields.

The government itself insisted upon greater emphasis on accident prevention in plants having war and defense contracts. No one appreciates this march of progress in accident prevention more than John A. Quesal, one of the leaders who combines the rare quality of long experience and fresh viewpoint.

Mr. Quesal would be the first to rejoice that the days are permanently gone when some tired, decrepit old character would be given the job and title of "safety man" merely because he had himself suffered an injury.

It is heartening to note that, in the main, those supernumeraries have been replaced by trained, adequately educated younger safety leaders who usually combine in one individual the attributes of psychologist, teacher, public relations expert, physician, engineer, inventor and nurse-maid.

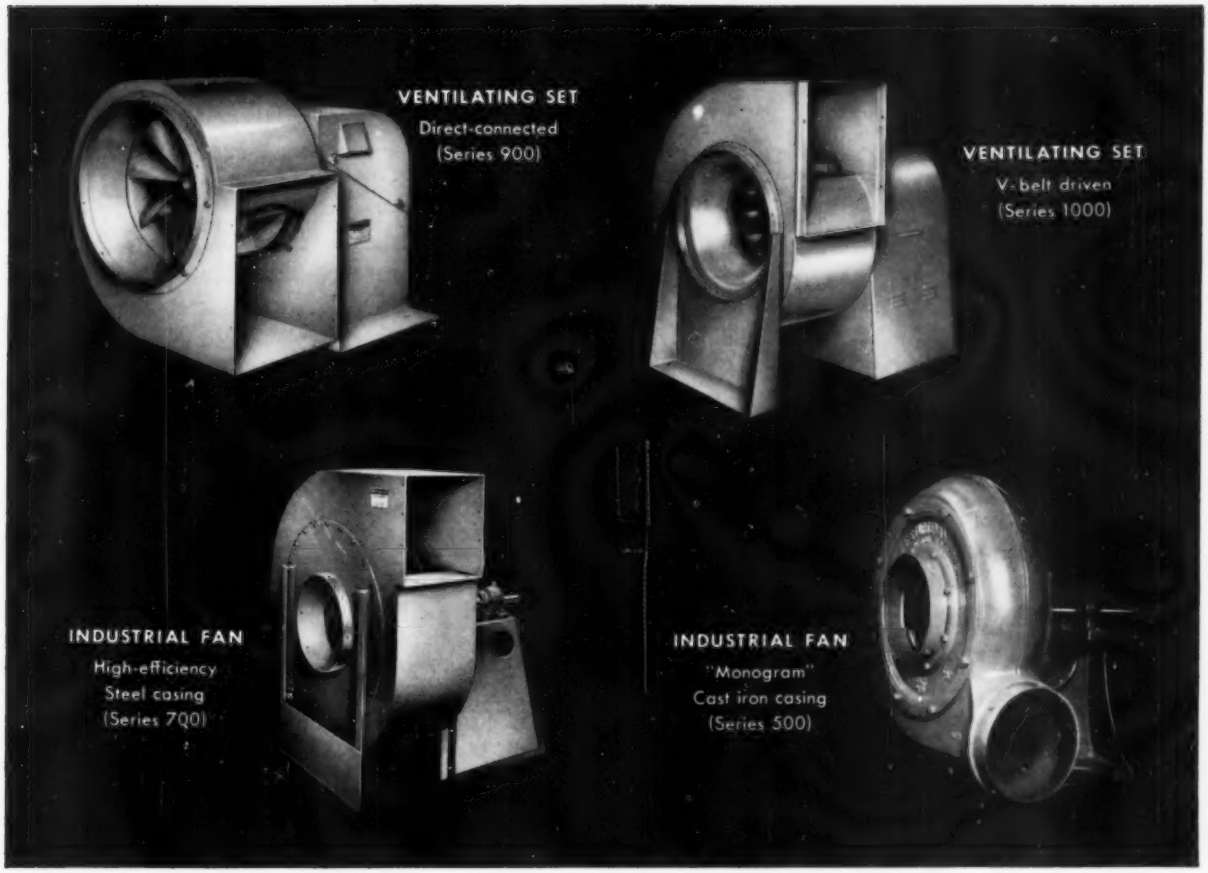
The younger safety director must pursue a pace which probably would have frustrated or even incapacitated his forerunner in "the good old days."

Just as the modern physician cannot keep abreast of the advance of medicine and surgery by resorting to outmoded methods of treatment, so must the 1954 safety director keep one jump ahead in all developments leading to accident prevention, better maintenance, fire control and health conservation.

As an example, the modern safety man needs and fully understands such technical data sheets as that covering the properties, uses and hazards of carbon tetrachloride published elsewhere in this issue. In far too many cases, this information would have been of little interest to the safety man of 30 years ago, had it been available, as he often considered that he earned his keep by tacking up signs reading "watch your step."

The editors of SAFETY MAINTENANCE join with Mr. Quesal in recognizing the accomplishments of the pioneers in starting the crusade for safety. Equally potent is our common appreciation of the fact that every day the successors to those pioneers are chalking up new safety records and reducing losses.

Today's safety expert is adding new laurels to the cause of human welfare and his efforts are worthy of the highest traditions of accident prevention first set up in "the good old days." H. A.



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No. 841P

No. 842 — #44 Cartridge for Ammonia

No. 844

No. 843

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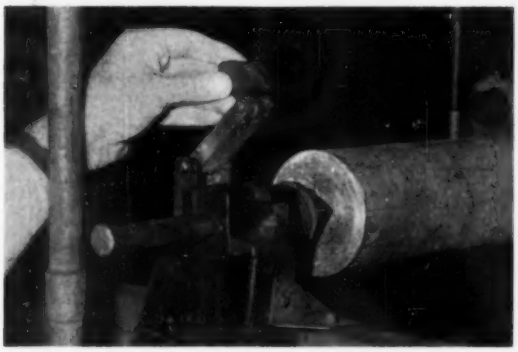
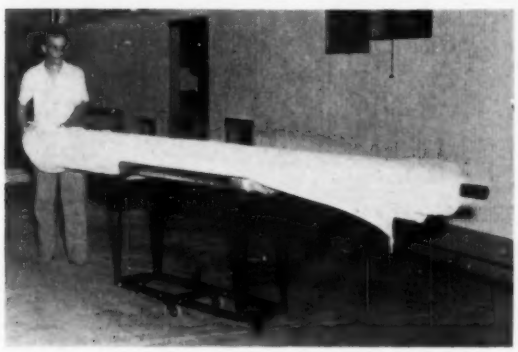
IDEAS...



Worker-suggested clamp holds 700 lb. fabric roll in place.



Doffing cart takes rolls of fabric off workers' shoulders.

Smaller hose connection, lighter hose, one man operation.

By HENRY JOHNSON
Safety Engineer
Celanese Corp. of America
New York, N. Y.

IN OUR DAILY EFFORTS TO PREVENT human suffering from injuries and loss of jobs and plant and equipment by fire, we often seem to reach an impasse. Probably this is the result of mental fatigue or of having wrestled so long with the problems of safeguarding men, machinery and materials that we no longer can see the forest for the trees. As a consequence, we are always in search of new ideas, devices and even gadgets to help us protect and educate our workers.

If it wasn't for new ideas, and the willingness of management to recognize and adopt the practical ones, we would not be enjoying our high standard of living nor the greatly improved accident experience in industry.

Where Are Ideas Found

Ideas of course are everywhere, i.e., in periodicals, newspapers, and in our contacts with other safety men and with our foremen and workers. This is a vast reservoir of ability, knowledge, and experience that should not be overlooked when it comes to solving safety problems. One of the best sources from the reservoir for practical safety ideas is, of course, this flow of ideas from your own foremen and your own workers. Their knowledge and experience makes them specially fitted to give you good ideas on how to cope with some specific hazard affecting their jobs.

Consider Workers' Views

Have you been giving sufficient consideration to the views of your foremen and workers on safety problems? How can workers be expected to accept enthusiastically

(Continued on the next page)

STOP ACCIDENTS

your recommendations that personal protective equipment be worn, or safety devices utilized, or foremen be expected to enforce safety rules when their practical knowledge and experience seems to be ignored?

Who Gets Hurt?

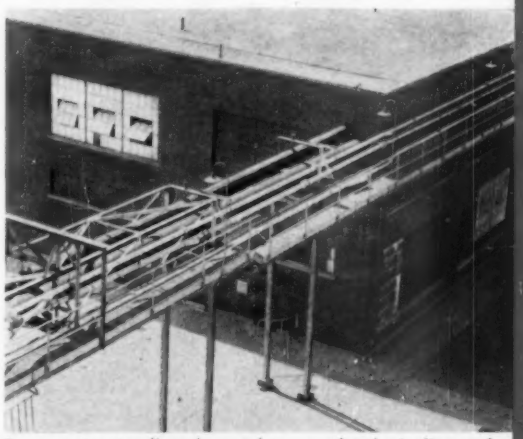
Aren't the workers the ones that usually get hurt when an accident occurs? Aren't the foremen the key men in your safety program? It isn't necessary for a person to be a trained engineer or a chemist in order to have practical ideas on safeguards. Foremen and workers live with their jobs at least 8 hours of every day. They are familiar with the eccentricities of the process and the equipment.

I am sure all management people have had experience trying to sell a worker on using a safety device or doing a job in the safe way. One common approach is to point out the pain to be endured as the result of the injury and the financial loss to his family. What happens when the supervisors' backs are turned; how many times does the worker start doing the job the old way, the unsafe way?

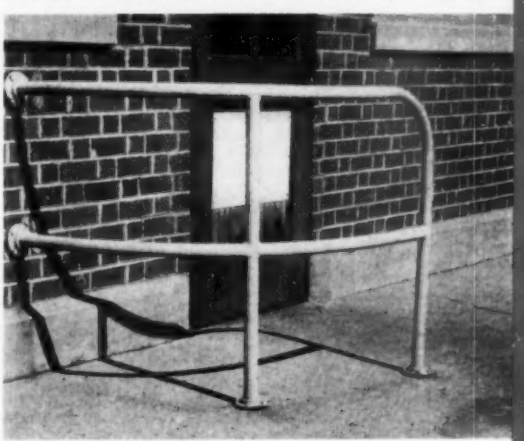
Why Don't Workers Accept?

There are probably a number of reasons why the worker did not accept the safe way of doing the job. One reason may have been a lack of adequate training. Another reason could be that, since it was his job, he felt slighted because his ideas on how to safeguard himself and his fellow workers were not considered at all. It is a psychological truth that when a person is given the opportunity to express his thoughts on things that concern him, he will more readily accept changes in procedure or equipment. Even though it may not be his own idea that is adopted, he is pleased that at least someone paid attention to his thoughts on the subject. If there is a question in your mind on this point, just consider your own reaction. How do you feel when some rule or procedure is forced on you even though it may be for your own well-being? Not too good, do you? Let's reword this question, "How do you feel if your opinion is asked on something that directly concerns you?" Pretty good, don't you?

How about the foremen and workers? They have good ideas. Certainly they are not anxious to be hurt,



Permanent cat-walk makes work on overhead pipelines safer.



Pipe-rail keeps suddenly-opened door from hitting workers.

Guard-rail protects man on truck top during bulk loading.

or to cause a fire, or to see one of their buddies or employees hurt. But, since they are directly involved, they feel that they should be given a chance to offer their ideas.

A Working Suggestion System

Our company believes the worker should have a chance to express his ideas. We do this by means of a suggestion system. If the worker's idea is adopted, he is paid for it. Briefly this system works as follows:

1. Numbered suggestion blanks are placed throughout a plant with a locked box to hold the individual suggestion along side. These are collected at least once a week. A docket is made of all suggestions received and sent to each department head in the plant.

2. Weekly meetings are held by these department heads and the suggestions considered. Those adopted are paid for as recommended by this committee.

3. Lists of adopted suggestions are sent to the other company plants having similar processes and products. If they also adopt the suggestion, they will make an additional award to the suggestor.

An Overall Coverage

This system is not just for safety suggestions, but for any kind of a suggestion. About 20 per cent of the suggestions received concern accident and fire hazards. Some merely call attention to a hazard while others suggest a solution to a hazard.

We have had some very good results from this suggestion system. In fact a number of hazards were called to management's attention which were unknown. Some good ideas for safeguards have been adopted from worker suggestions.

Examples of Ideas That Helped

For example, after flange bolts were loosened it was still difficult to get two sections of pipe apart, in which case a pinch bar was used to pry them apart. This could result in spraying a worker with a chemical, hot water, or steam. A piece of tar paper served as a deflector, on the suggestion of an employee.

Cork rolls on downtwist machines had to be buffed to remove dirt, which had its dangers for the mechanic, since the machine was operating while the soil was removed from the cork rolls. The mechanic's hands are now farther away from the revolving machinery, as per a worker's suggestion.

A hook or pick used in drawing threads through the elements of a knitting machine was carried behind the ear or in the shirt pocket; the potential danger was great. A plastic cover, worker-suggested, now covers the sharp end of the hook.

A circular aagle-iron, adjacent to a transporter was extended to prevent a pinch point between the side railing of the transport and the metal guard shielding the pulleys and belts, thanks to one suggestion.

Everybody's Happy

We have received some very good suggestions which have helped us improve the safe working conditions in our plants. Our workers like the system and so does management. It provides a channel for the worker to communicate with management and enables management to learn of peculiarities of machinery, process and/or procedure which, if allowed to continue, could result in injury to employees or damaged property. The system is another means of obtaining teamwork which we all know is so important to the success of any safety program.

Of course it is not necessary to use a suggestion system such as this. Any procedure or method whereby foremen and workers can make suggestions for the correction of hazards will suffice; so long as the individual receives the credit for his or her suggestion, whether the credit is financial, written or verbal. Needless to say, the attitude of management must be open-minded and unbiased with the obvious willingness to listen to and to consider all suggestions, good and bad.

By the use of such a system, it is possible to make employees feel more a part of an accident and fire prevention program. They will be more receptive to educational efforts and to your desire for them to use protective equipment and devices.

From an address delivered at the National Safety Congress. Pictures by courtesy of Celanese Corp. of America.

SAFE SET-UP, HANDLING, AND STORAGE

By L. KRANTZ
Press Dept. Supt.
Fisher Body Div.
General Motors Corp.

As one of several large stamping units in our corporation's system, our Grand Rapids plant contains more than 155 major presses. Many of these presses are comparable to a 4 story building, two stories above and two stories below floor level. If it were possible to build a platform and place 180 elephants on this platform, their combined weight would equal the pressure developed by these presses, which is in excess of 900 tons. Press safety and die safety are large orders for us.

These larger presses are used to stamp roof panels, one-quarter panels, and other large body parts. Some of the dies used in these major presses weigh up to 70 tons, and must be handled safely. We also have 175 smaller presses. These presses are used to produce smaller body parts, some of which are as small as the buttons on a shirt. We have approximately 1,975 dies which range in size from the 70 ton dies down to dies that weigh approximately 200 pounds.

Die Handling

We have 18 large overhead cranes, each equipped with two hoists, one of which is capable of lifting and handling the heaviest of our dies. The other and smaller hoist will handle dies up to 20,000 pounds, and is used in handling the smaller dies. These cranes are also utilized in handling material at the presses. Our plant is scheduled on a five-day cycle of operations. This means that the majority of these 1,975 dies must be transported, handled, set and removed from the presses each week.

Dies which must be moved from one area of the plant to another area where the product run is to be made, are transported on heavy duty die trucks and dies are moved by tractors.

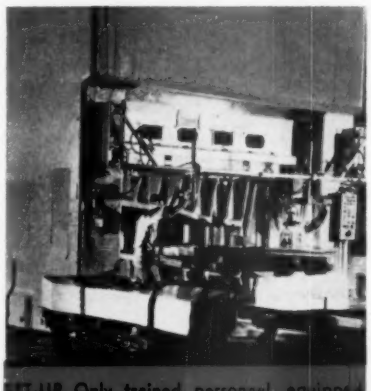
The dies rest on long 4 by 4's which are made up of hardwoods, and extend the full width of the die. The larger dies are cored out on the bottom to reduce their weight. The full width 4 by 4's assure a more stable load. It has been our experience that unless the long blocks are used, vibration experienced during transportation may cause the die to slip on the blocks and spill.

Prevent Movement

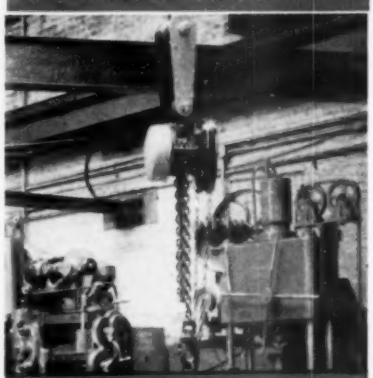
Dies stored metal to metal are apt to move through vibration. In order to overcome this, we store all our dies on hardwood blocks and are able to stack them one upon another with safety. The wood absorbs the vibration and provides enough friction to keep them from moving.

To handle our dies, alloy steel chains are used. These are large enough to maintain a 5 to 1 safety factor. They are regularly inspected by the hookers. In addition our safety department has instituted a spot check or double check to see that we are not missing anything.

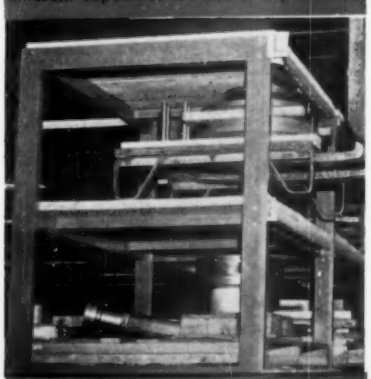
A chain washing barrel is provided. We insist that our hookers wash their chains regularly. This gives them an excellent opportunity to inspect their chains. If any flaw



SET-UP Only trained personnel, equipped with all safety devices, perform this job



HANDLING Color-coded chain hoists of different capacities are also safety measure



STORAGE Dies are stored on raised wood blocks to protect them from any damage

OF POWER PRESS DIES

is discovered, the safety department is notified, the chain is tagged, and taken out of service.

To avoid overloading chains and hoists a color code has been set up. The larger hoists are painted a color; and dies which are to be handled by each hoist have an area painted a corresponding color. There is no guesswork and the worker knows that he is using the proper equipment for the load he is handling.

Chains the Right Way

There is a right way to handle chains. We insist that our hookers keep their hands away from the load when the slack is being taken up by the crane operator. If it is necessary, due to the shape of the die to hold the chain in order to make the hookup, we instruct them to keep their hands above the load so there will be no danger of their fingers being caught by a rolling or twisting chain.

We feel that the production worker must keep his hands out of the dies or danger area. This is accomplished through mechanical handling devices on the various die equipment. This program has paid off, not only through elimination of press accidents, but through increased productivity of the employee. He is able to work with less fatigue and he can work faster because he has the assurance of being safe.

Mechanical handling equipment must be removed before die setters can pull the die. This equipment must be removed before the die setter can go to work. This is done by our "mechanical devices" workmen. Each press is tagged out while they are working on the equipment. We always use safety tags. Each man whose assignment requires him to work on a piece of equipment must first pull the switch, then place his tag on the control panel. This tag has the man's name, clock number, and department on it. He is the only one who is allowed to remove this tag.

After the devices have been removed die setters take over, first hanging their tag on the control panel of the press. We remove the dies by using the overhead crane to pull them out on a set of skids. We admit here that we have not progressed as much as we would like in our die set methods. Production technique has developed tremendously in the last few years, while we set our dies by the same old methods we used 20 years ago. We are presently trying to do something about it.

Die Setting Safety

Die setting is an important part of any stamping activity. The safety of the production workers, the safety of the die try-out workmen and, the safety of the die setter himself depends on the die being properly and securely fastened into the press.

Most die shoes are made of cast iron. Because tapped holes in the die shoe tend to become worn through continued use, we avoid this type of hookup wherever possible. We have found the clamp type hookup into the flange of the die much safer.

Where studs are put into a tapped hole, we have to rely on the die setter to be sure he is using a bolt long enough to insure ample thread and holding power. On the other hand, by using nut and bolt, it is very easy for anyone to determine the amount of thread holding.

Nut and Bolt Easiest

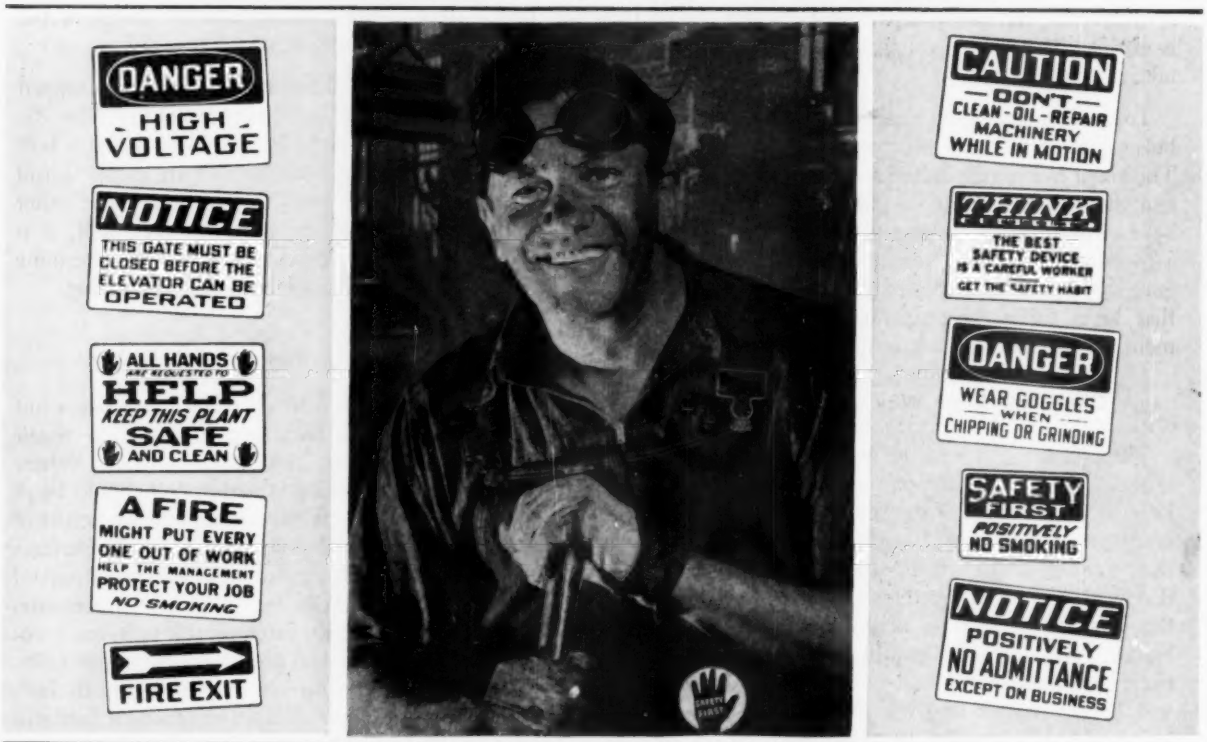
It is much easier to replace a nut and bolt than to have to repair faulty threads in a die. Where blocking is required, it should be in one piece and equal to the height of the die flange. Certainly washers and similar small pieces of metal stacked together are inadequate. We use three-quarter inch, one inch, inch-and-a-half and two inch bolts. We do not use seven-eighth inch bolts. A seven-eighth inch bolt will tighten up when placed in a one inch tapped hole, but will not hold.

Possibly one of the biggest hazards in die setting is in the handling of air jacks. In the older types of presses where the jacks came up against the bolster plates, they quite frequently stuck and came up with a bang. This would snap off the bolster bolts and send them flying in all directions. Under new standards this trouble has been eliminated by self-contained jacks. In plants which still have some of the old equipment, everyone working around the presses should be alerted and cautioned. By using extreme caution when turning on the air, the

(Continued on page 24)

Stonehouse SIGNS

FOR INDUSTRIAL ACCIDENT PREVENTION



There are many types of Stonehouse Signs. Most are worded to cover specific hazards, such as Eye and Goggle signs, Fire, Machine, Electrical, and so on.

Others are important for the protection they furnish, covering such features as Entrance, No Parking, Stop and similar warnings—listed as Miscellaneous signs.

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ACCIDENT PREVENTION • *steel* SIGNS IN STANDARD COLORS AND DESIGNS

ABOVE

Identified by the insignia on their hard hats, these troublemen complete a pole line check, completely protected by their safety equipment.

SAFE HEADS SHOW

EMERGENCY MEN IN the Consolidated Edison Company's Service Bureau have been issued new flame-proof plastic hard hats which, not only make hazardous work safer, but also ***quickly identify them*** to the public and civil authorities as the New York utility's top emergency service mechanics.

The new headgear was subjected to rigorous tests according to the company's standards. The plastic shell protects the wearer against electric shock from possible head contact with "hot" lines during pole repair work. Tests showed that even when the plastic shell, which has no metal parts, is soaking wet electricity will not "creep" on it.

It also affords protection from falling objects for jobs at ground level or in manholes. The hat's toughness was proved with sledge hammer blows which bounced off its surface without cracking the shell.

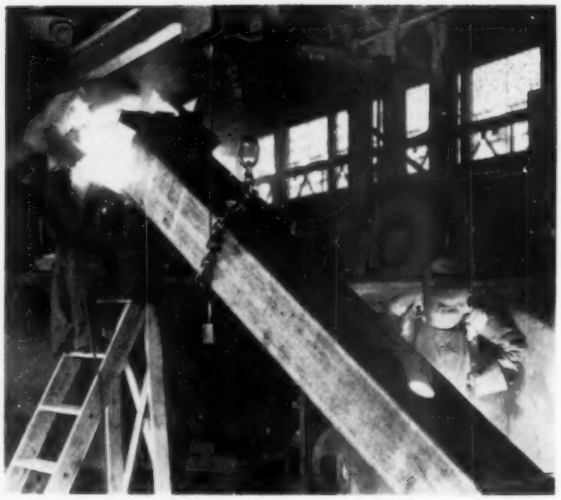
Though the hat's primary purpose is protection, its identification purpose is an important one. With these new hard hats the safe heads of Con Edison's emergency men stick out like sore thumbs. The color itself is distinctive enough—bright golden-yellow. And added to this is the Con Edison script, which appears in blue on each side, and the company's equally familiar "Edison Man" trade mark with the wearer's identification number on the front. The emergency man's hard hat will now be his badge of office and pass card to cross police, fire and civil defense lines.

Pictures by courtesy of Consolidated Edison Co. of New York.

Wearing new gold hard hats, distinguishing them to police and firemen as authorized troubleshooters, these repairmen begin manhole job.

BELOW

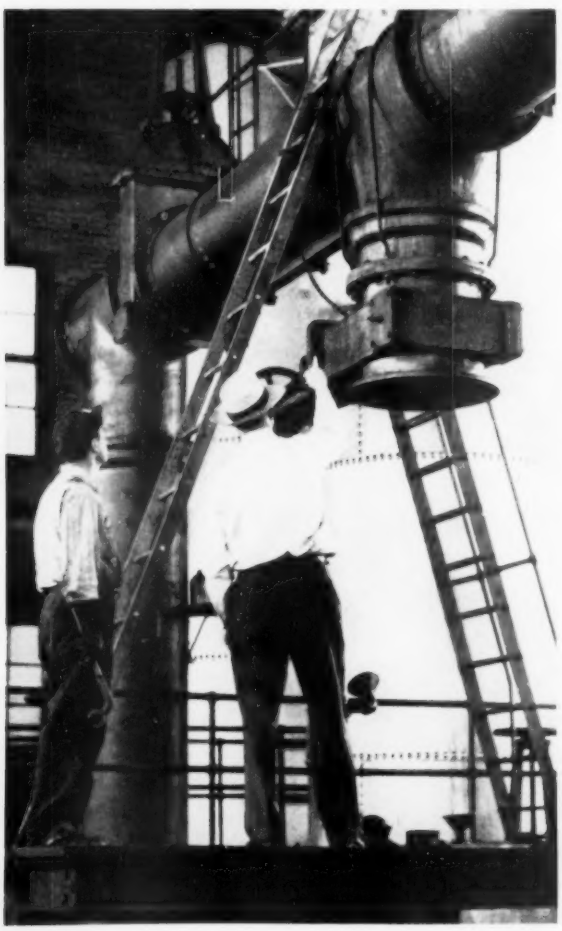
By HENRY G. LAMB
Safety Engineer
American Standards Assn.
New York City, N. Y.



WHAT DO

THE AMERICAN STANDARD SAFETY CODE for Portable Wood Ladders, in its revised form, is now ready for ladder users.

One of the most important changes from the 1948 edition revises the table of various species of wood to be used in the construction of ladders, and groups them according to their strength characteristics. All of the woods and strength values shown in the table were reviewed in detail, and certain changes were made. The original information came very largely from tests based on small clear specimens of wood for each of the 54 species of wood mentioned. Of course, it is common knowledge that it is impossible to get ladder rails 20 to 30 feet long in commercial quantities that have exactly the same characteristics as the 30 inch clear specimens used for these tests. In this latest revision, further tests were made on small specimens, and additional tests were even made on full-sized timbers to confirm or revise the strength values shown in this table.



The second major revision was also based upon these tests. As part of the standard, tables of dimensions have been shown for the thickness and depth of the inside wood rails of straight and extension ladders. These tables have now been revised in order to make them consistent with the new wood values adopted in the first revision.

Dry or Useful?

Any standard or specification is apt to get wrapped up in a lot of detail that makes dry reading to anyone not particularly concerned with the point in question; but looking at this American Standard as a national agreement concerning ladders, I believe it can be of real help to a great many people. Only a few specific manufacturers may be concerned with metal working machines or punch presses; certain others may be concerned with textile machinery or woodworking machines; but there are very few manufacturers anywhere who do not occasionally have use for a ladder for some purpose. Even with the present trend to have factories all on one floor this holds true. Somebody has to climb up and maintain the electric light bulbs; somebody has to climb up to patch the leaky roof or make repairs in a roof or ventilator.

IN THE NEW

YOU FIND . . .

LADDER CODE?

It used to be on construction jobs that carpenters would make their own ladders for the job. Today carpenters get such high wages that most contractors find it far more practical to purchase ladders already built to the right size and dimensions, and ready to use. On the other hand, the sight of a clerk using the trolley ladder to climb way up and get out a couple of pair of shoes from the high shelves, is still with us. Even today these trolley ladders are used quite extensively both in stores and storage areas.

With the present trend of home owners to do most of their own repair work rather than hire a handy man, more and more homes are purchasing their own ladders or else borrowing one from the next-door neighbor. All of these users are concerned with ladder safety.

This standard provides a minimum standard of quality and strength which makes certain that ladders will have built into them the inherent safety features necessary for good service. The standard also provides the information necessary to inspect your present ladders to determine whether they are still in sound and safe condition or should be condemned as defective or unsafe. The standard also provides very valuable hints concerning the care, storage, and use of ladders.

For instance, this standard explains why you need to use a 28 foot extension ladder in order to reach the crossbeams in your factory which are only 24 feet above the ground. In the first place, the length of an extension ladder is the sum of the lengths of the individual sections. The standard shows the minimum amount of overlap which must be kept with each size of extension ladders. In this case the overlap has to be 3 feet. The standard also explains that when a straight ladder is placed against the wall, the butt of the ladder should be out from the wall one-quarter the length of the ladder. At that angle the top of your ladder, which is now 25 feet in length with the 3-foot overlap, will just about reach 24 feet above the ground.

The standard also makes recommendations on the very controversial subject of painting ladders. The standard as now written recommends that when ladders are bought and sold, or inspected as a basis of approval or acceptance, the ladders should be in the natural wood. The standard also provides that when a user has purchased a ladder, inspected it, and satisfied himself that there are no visible defects in the wood, he may then paint it. One large organization actually doing this now is the Bell Telephone System which has a very large number of ladders on service trucks. Most of these ladders are painted the same color as the trucks and the rest of the equipment.

For the Right Job

This standard also should help the user to pick the right ladder for the right job. The ordinary single ladders and extension ladders have been constructed on the assumption of a single load of 200 pounds applied at the center of the ladder. This should take care of the average conditions found in industry. Everyone knows that at certain times, both in industry and in construction, extra heavy loads have to be handled, and dimensions for special purpose ladders, such as a mason's ladder designed for heavy construction work, have also been included in the standard.

An extension ladder failed after one man at the top of the ladder had been trying to push a heavy item up into place over his head. This had been a little bit beyond his capacity, so another man ran up the ladder to help him. When they both began to push this object into place over their heads the ladder broke. When you add the weight of the two men to that of

(Continued on the next page)

the downward force due to their upward push on this object, it is easy to see how this ladder became overloaded.

The standard has a separate section on step ladders. From the point of view of an engineering analysis the lines of force within the various parts of a step ladder become rather complicated and indeterminate. Here the past experience of the various ladder manufacturers has been very helpful in determining dimensions for 3 types of step ladders.

The first type is for heavy industrial use. These ladders are built so that one employee may climb up the steps in front, and a second employee may climb up the rungs on the back legs of the ladder in order that they may work together on an over-head job.

The second type of step ladder is sort of an in-between variety. It is only intended for the use of one person at a time, but is still quite rugged and should give long years of service.

The third type of step ladder has the lightest weight and the minimum strength considered by the standards committee to be safe for use in the factory or in the home.

How Does It Help the Manufacturer?

Of course, these same standards are also very helpful to the manufacturers of ladders. The minimum dimensions specified in this standard have been based upon the current standard lumber dimensions in order to be sure that the manufacturer can purchase standard sizes of lumber and make the most efficient use of it in making the finished product. In a sense this standard also provides the reputable manufacturer with a very fine sales tool. If he is putting good wood and full dimensions into his product, he can call attention to the fact that his ladder meets or exceeds this specification, and explain to the customer why it is to the customer's advantage to pay a little more for a good ladder, rather than to buy something on a price basis which may in fact be a real gamble on his life whenever he uses it.

This standard has also been prepared to help the state regulatory authorities. Many states have state regulations concerning ladders, and it is hoped that all these regulations can become technically the same as this American Standard. In the first place, the fact that this standard has been developed by representatives of national organizations who are technically competent to do a thorough job relieves the state of having to start out from scratch, forming its own technical committee and spending considerable time and money in discussion and research to establish the same information already provided in the standard.

Similar Requirements Easier

In the second place, when states are willing to adopt uniform requirements for anything like ladders, then this automatically makes it just so much easier for all ladder manufacturers because they can then make one standard ladder and sell it in any of the 48 states; whereas, if the technical requirements in each state are different, the ladder manufacturer has to make one style of ladder to be shipped to Nevada, and another style of ladder perhaps to be used in Utah.

The committee has operated on the basis that the actual testing of any wooden ladder may so weaken it that it would be highly dangerous to use this ladder again after it has been tested. This fundamental characteristic of wood has been one of the reasons why the code for portable wood ladders has been written on a specification basis. This code specifies certain exact dimensions and also the formula for computing other exact dimensions for side rails and for the rungs or steps of the ladder. It also gives the information concerning wood defects such as shakes, checks, knots, pitch pockets, and the permissible limits for cross grain. By use of these specifications a visual inspection of the ladder can form the basis of acceptance or rejection either of a new ladder or a ladder that has been used.

The standards committee that developed this specification is now working on two companion documents. The first will cover portable metal steel ladders and the second will deal with fixed ladders. Metal ladders, as distinct from wood ladders, produce an entirely different problem. Metal can readily be tested, and so long as no permanent deformation can be observed, the ladder will be just as good as ever. The metal ladder code will probably be written on the basis of performance requirements and methods of test so that any new types of metal ladders developed for the future, so long as they meet the performance requirements of the standard, will be considered acceptable.

Fixed ladders were discussed in the General Ladder Code back in 1935 in order to provide dimensions and special requirements for the distance of the ladder from any fixed object, and requirements for the ladder cage and other accessories which go with fixed ladders. These requirements are now being reviewed and will be brought up to date and be made available as a separate document.

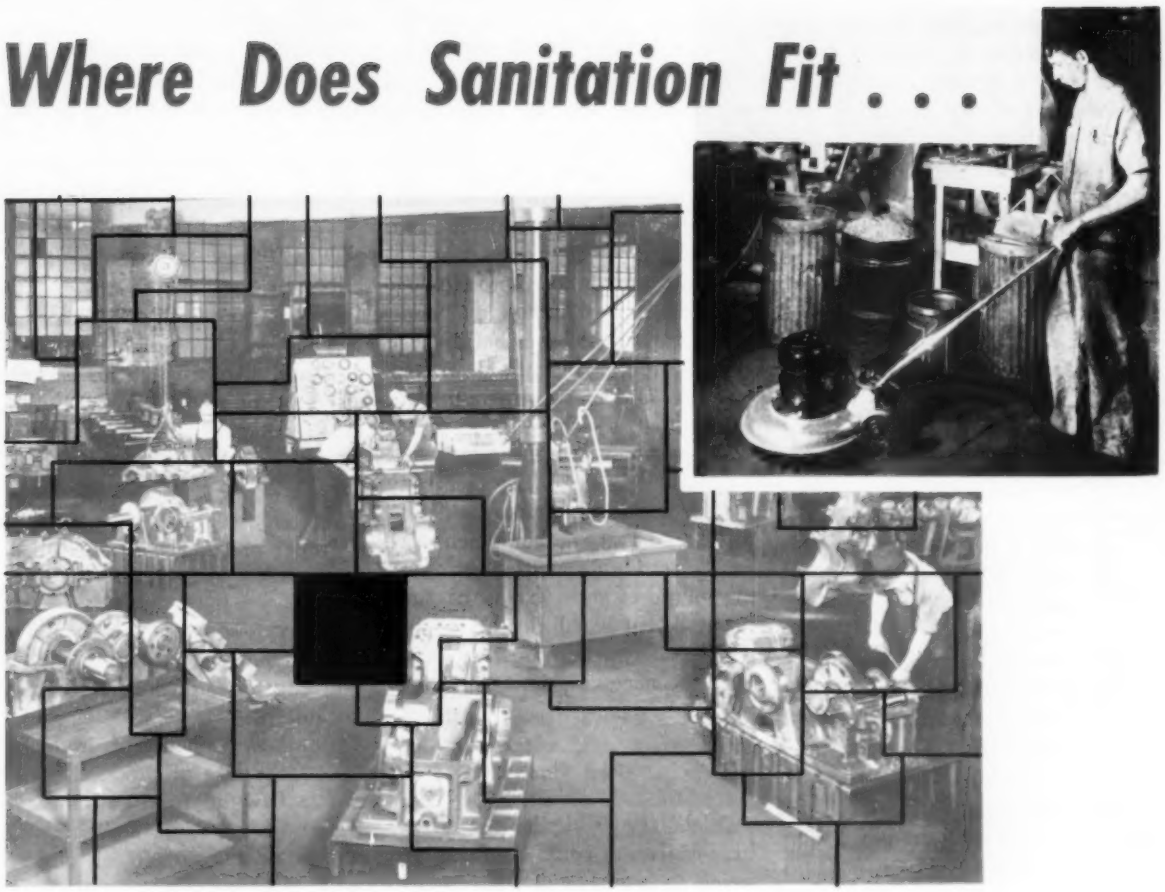
"Marvelous Contrivance"

The modern straight or extension ladder is really a marvelous contrivance. It must be strong enough to hold you when you want to climb on it; but if the ladder is so strong that it cannot possibly break under your weight, then it becomes so heavy that you run the other chance of getting all kinds of strains or hernias when you carry the ladder or up-end it for use. Therefore, it is also to your advantage to have the manufacturer make this ladder as lightweight and easy to handle as is consistent with the strength necessary so that you can climb, and live to climb again tomorrow.

From an address delivered at the National Safety Congress.

Pictures by courtesy of: left, Liberty Mutual Insurance Co.; right, Patent Scaffolding Co., Inc.; top, American Chain and Cable Co.

Where Does Sanitation Fit . . .



INTO PLANT MAINTENANCE?

By V. J. DEL GIUDICE
Section Head, Research Division
Armour & Co., Chicago, Ill.

THE WORD SANITATION means different things to different people. Webster defines it as the enactment of sanitary measures for public health purposes. It can be or it includes varying degrees of good housekeeping, cleanliness, and elimination of rodents, insects and micro-organisms. This is accomplished by use of cleaners, detergents, sanitizers, brushes, protective coatings, paints, and towels, just to mention a few.

Sanitation is put into practice by using these items in standard ways that are established and recommended by the individual manufacturing companies, associations, or government agencies.

Standards Necessary

The proper standards of sanitation should be uniform, and not vary from company to company in the same industry. It would be desirable, for example, for all meat packers to have the same basic standards which could be established and recommended by an organization such as the American Meat Institute. The bakers, confectioners, dairy, and other food industries could do the same. Non-food industries should have their own standards too. Then each company could implement a program with its own personnel.

All of the standards should give much consideration to product purity, and employee health and morale, as these factors contribute to the profit dollar in any business. Product purity has the appeal that

keeps the customer happy and adds to the sale of the product.

Proper employee health and morale contribute their dollars and cents by reducing accidents, sick time, excused absences, and what is very important, by increasing employee production and efficiency to produce a better finished product.

The maintenance of standards of sanitation, product purity, and employee morale and health could perhaps, be accomplished by the following steps:

(a) Issuing booklets that give specific instructions concerning these items.
(b) Surveys, and inspections at least twice a year, of all operations and units, stating what is wrong and how to correct it.
(c) Statistical quality control methods applied to production lines.
(d) Posters and suggestion boxes.
(e) Incentive rates for jobs well done by employees.
(f) Establishing sanitation committees on a local level.

The responsibilities of the enactment of sanitation programs should be clearly defined by management in a letter, and in a meeting, to all operating heads. The director of sanitation should be responsible to a manager, who reports directly to the head of the company or is on the executive staff. ***Under ideal circumstances the responsibility of sanitation should not be left to the production, sales, engineering, safety, master mechanic and/or the research departments.***

Death by Passivity

This is because sanitation is just as important to plant operations as any one of those groups. Often sanitation activities are curtailed, or given passive support, in favor of an operating procedure when the function of sanitation is under their jurisdiction.

Sanitation should be a full-fledged activity of the company, and recognized as an equal member of the team whose goal is to get the job done with a profit. In no case should the sanitarian feel he is the only judge or refuse to sit down at the conference table to work out the joint problems with all concerned.

The sanitarian should have the responsibility for all inspections, have made available to him the costs of maintenance of equipment and machinery, sanitation tools (such as brushes, high pressure cleaning units, detergents, and insecticides), labor costs, product and time lost due to unsanitary conditions. He should have the privilege of reviewing all blueprints for new buildings and/or construction work to see that basic sanitation needs such as drains, sloping floors, etc. are included. It is also necessary that he review all equipment design to be sure that the equipment (a) can be readily dismantled for cleaning purposes and (b) is of such material that it will do the job and still be able to be properly cleaned with the necessary detergents without being damaged.

Pilot Plant

A laboratory and pilot plant under his jurisdiction could conduct tests on all tools and equipment used in sanitation work, and from these results recommend to the purchasing department the suppliers that have satisfactory products.

He should receive all orders from departments or units and approve them for purchase. However, he should not have the responsibility for the actual purchase, which without question is a function of the purchasing department, which will know from whom to buy if the above organizational procedure exists.

Sanitation Committees

It would be advisable for the sanitarian to establish a company-wide sanitation committee that includes representatives of the production, engineering, purchasing, and safety departments. They could meet on a regular basis and discuss their problems and ways to solve them. At these meetings the pros and cons, suggestions, constructive criticisms of each function could also be discussed.

Another important function that the sanitation department should have is the handling of all contacts with federal, and local government regulatory agencies concerning sanitation activities and problems that these groups may have with the company.

Naturally, the question is often asked by top level management—"What does sanitation cost us"—I would like to ask the converse of that question—"What will it cost a company, particularly a food processor, if it does not have sanitation?"

Proper and Improper Sanitation Costs

This can be summed up by stating that improper sanitation can be costly in terms of dollars and cents because of:

(a) Lower quality of product.
(b) Spoilage of product.
(c) Lawsuits from customers.
(d) Improper use of all sanitation tools (wastage of cleaning materials).
(e) Lack of or half-hearted maintenance programs.
(f) Poor public relations as the result of publicized government seizures of product.
(g) Unwillingness of plant operators to follow practical and sound sanitation programs.

All of these factors when changed to the positive and affirmative side will put dollars and cents in the cash register, and this is accomplished by coordinating a sanitation program with plant maintenance and production.

The sanitarian is not a policeman or an impractical scientist—he can offer much to help solve company problems on a practical basis if top management will give him the opportunity and authority.

From an address delivered at the Plant Maintenance and Engineering Show.
Pictures by courtesy of: top, Hild Floor Machine Co.; below, Westinghouse Electric Corp.

AN APPROACH TO SOLVENT SAFETY

SOLVENT
Designed to replace more hazardous solvents.
COMBUSTIBLE MIXTURE
Flash point: 140° F.
Fire Rating: In a class with kerosene oil.
Keep away from open flame.
WARNING—Vapor Harmful
Use only with adequate ventilation.
Avoid prolonged or repeated breathing of vapor.
Avoid contact with eyes, skin or clothing.
Do not take internally.
— SUGGESTED USES —
Electrical Equipment, Motors etc.—Spray, Brush or Wipe To Degrease And Clean. Will Not Harm Baked Varnishes, Insulation or Metal Parts. Contact With Rubber In Normal Maintenance Cleaning Not Injurious, Prolonged Soaking May Cause Swelling.
Metal And Mechanical Products And Parts—Soak, Spray Or Brush With Solvent To Degrease And Clean.
Note:—To Avoid Residue, Complete Cleaning Process With Air Blow Off To Remove Trapped Or Excess Solvent.

By JOHN B. MOORE, Pres.
John B. Moore Corporation
Nutley, N. J.

IN RECENT YEARS, the industrial community has become acutely aware of the dangers involved in the use of carbon tetrachloride for solvent degreasing and cleaning. The consistent reduction of limits of maximum allowable concentration of CCl_4 per million parts of air, (now lowered to 25 parts), does not emphasize sufficiently its insidious and lethal hazards. It is not only toxic in the sense of massive exposures, but it is cumulatively toxic in that the human body cannot metabolize it, and disability or death occurs when the accumulative damage exceeds the ability of the body to effect its own repair. At this point, there is no medical remedy or known treatment.

The history of solvent usage shows many efforts to suppress extreme flammability of less toxic petroleum solvents and decrease toxic effects of carbon tetrachloride by mixtures or blends of the two. While initial suppression of flammability is thus realized, the advantage is lost early in the evaporation cycle, because of the difference in rates of volatilization, and three hazards replace the two which existed before. The third is worker carelessness, bred of the assumption that both toxicity and flammability have been lessened.

No "Safety" Solvent

In discussing solvent safety, I wish to make a point of the fact that there is no such a thing as a "Safety" solvent. The term is an outmoded description which was devised by fire protection people to designate solvents having a minimal flash point of 100° F, and it has no other significance. The abuse of the term has led to my company's adoption of the phrase "Solvent Engineered for Safety" as a device to encourage consideration of both toxic and flammability factors as objectives of solvent safety.

Today, relatively stable blends of solvents which do not contain carbon tetrachloride are being produced. In general, these products are considerably less toxic and less flammable than CCl_4 mixtures, and are, when properly applied, more efficient even than pure carbon tet.

With these techniques of blending developed, many new companies have rushed into the field, and a number of worthwhile products have resulted. What has happened, however, is that the introduction of products has been accompanied by a wide variety of claims, many of which are without basis in fact, and too little consideration has been given to what solvents must do, and under what conditions they must perform. This tendency, if not checked, may again lead us 'down the path' and away from our objective—solvent safety.

Let's discuss some of the basic considerations that should underlie the selection of both solvents and solvent suppliers. In so doing, there is intended no criticism of any particular organization or brand of product. The objective is to prevent accidents which arise from the misuse, mis-application or improper selection of solvent products. I shall use the electric power industry and its problems as a basis for illustration.

Questions to Settle

To consider the selection of a solvent, the first question to settle is ***What Must the Solvent Do?*** The next consideration is: ***Under What Circumstances Must It Do It?*** and; finally, with the product so defined,

What Are the Limiting Factors of Safety? The first two questions and their answers will bring into focus a number of specific products. The last question will eliminate most of them. The final choice, then, will rest on the basis of ***Product Efficiency & Cost.***

Up to this point, we have dealt in generalities. Let's be more specific. Within the power industry, we have a fairly wide variety of solvent cleaning operations. There are large generating and motor apparatus, switchboard panels, instruments and meters, power transmission parts, transformers, automotive equipment, radio transmitters and receivers, typewriters and office machinery, machine shops, appliance repair shops—in short, about everything one finds in most other kinds of industry—although the emphasis is in power generation and transmission equipment and accessories.

In considering the kinds of solvent cleaning jobs to be done, it becomes apparent that no single "universal" solvent will satisfy all problems; yet economics demands the utmost simplification so that not only safety control may be exercised, but purchasing, stores and engineering controls may be kept within reasonable limits.

Let us analyze the work and see how selection progresses:

First: The most critical areas where natural hazards (those inherent in the work itself) are present in electrical operating areas and the cleaning of equipment in those locations. This divides into standard and special work situations. For standard work, which takes in over 90 percent of uses, we apply all 7 of the basic selection of properties rules, *(see table)* but apply the rule of reason to flammability and toxicity. In special situations there can be no deviation or latitude—cleaning in locations of high heat exposure permits of no latitude in flammability requirements of solvents—nor can there be latitude in toxic factors where conditions are such that adequate ventilation cannot be provided.

Second: Precision equipment such as meters, instrumentation radio and kindred apparatus. In this area, as before, all 7 rules apply; but stress is placed on points 2, 4 and 5—no residues, drying speed and cleaning effectiveness. Here the mechanisms are both precise and delicate, and calibrations may be adversely affected by solvents improperly selected.

Third: Machine shops, automotive shops and appliance repair shops are, as a rule, more tolerant. More space, more time and generally less critical equipment from a tolerance viewpoint, permit some relaxation in rules 1, 3 and 6—dielectric strength, moisture displacement and flammability limit.

Fourth: Office equipment. Here non-combustibility, low order of toxicity and fast drying speed (6, 7 and 4) take precedence, so that company records may be safeguarded from fire and workflow will not be retarded. The quantities of use in terms of volume of solvent per job are very small as compared with shop and plant consumption. It is nonetheless, an often overlooked, but significant source of danger. If in doubt, just ask what is in the typewriter cleaner your secretary uses. You may be unpleasantly surprised.

It is probable that most power companies could simplify to the extent of standardizing on two solvents; one, in relatively small quantities to take care of both office equipment, instrumentation and special situations in operating areas. The second, for more substantial use, to take care of all other general cleaning requirements in operating areas and machine shops, etc. The final determination of whether to use 2, 3 or 4 solvents, depends upon the size of the organization and cost factors in the light of direct departmental cost charges.

From an address delivered before a group of Electrical Safety Engineers.

What are the common denominator properties to look for in any good solvent . . . ?

First: High dielectric breakdown strength and non-conductivity.
Second: No oily residues after drying to attract carbon or other conductive materials to cleaned surfaces.
Third: Moisture displacement. The solvent should be heavier than water.
Fourth: Adequate drying speed. Too fast drying rate will cause moisture to condense from atmosphere; too slow will retard the work rate.
Fifth: Cleaning effectiveness should be adequate to remove the soil without impairment of the surfaces or damage to insulation.
Sixth: Flammability should be held at safe margins over the maximum anticipated temperatures and exposures of the work area of use.
Seventh: Toxicological factors should be determined in accordance with the manner of use and area of use, with due regard for possible symbiotic complications. By symbiotic, is meant the chemical or toxic complication which sometimes arise when two, or more, materials which, of themselves, are inert or stable, combine.

Die Safety

(Continued from page 15)

danger can be controlled. In our weekly safety meetings we discuss conditions of this type with the man on the floor. By this method we get some excellent ideas for eliminating a hazard.

Another hazard which is ever present is the danger of die setter or hooker having his fingers pinched between die and press. This is particularly true of the smaller dies which are moved more often by hand. The die setter must be alerted to the danger in this type of handling.

There is one thing we continually stress in our weekly safety meetings. Remember, you can't guard the individual against himself through merely mechanical means. It is only by education and constant vigilance on the part of the supervisor that we can develop safe work habits that become so much a part of a workman's thinking that they are automatic. Front line members of management must see that this education is carried out.

From an address delivered at the National Safety Congress.
Pictures by courtesy of: top, General Motors Corp.; middle, Faber, Berren & Co.; bottom, Sperry Gyroscope Co.

"...through a person-to-person canvass..."

ROBERT S. MACFARLANE
President
Northern Pacific Railway Company

"Combine a good product with enthusiastic salesmanship, capably directed, and favorable results are reasonably certain. This winning combination through a person-to-person canvass recently added more than 8,000 employees of the Northern Pacific Railway to the Payroll Savings Plan for purchase of U. S. Savings Bonds. It is gratifying to me that the organized efforts of Northern Pacific personnel not only have resulted in substantially increased systematic saving and a greater investment in America's future by our employees, but that the Treasury Department is using our campaign as an example throughout the railroad industry in its efforts to step up regular purchases through payroll deductions."

The U. S. Savings Bond *is* a good product . . . Payroll Savers *are* enthusiastic Bond Salesmen . . . company spirit *was* good because everybody on the Road knew that Mr. Macfarlane was 100% behind the effort to increase employee participation in Northern Pacific's Payroll Savings Plan.

But, there was still another, and very important, factor in the success of Northern Pacific's campaign that added more than 8,000 new Payroll Savers — a Person-to-Person Canvass.

A good Person-to-Person Canvass is an organized employee effort that puts a Payroll Savings Application Blank in the hands of every man and woman in the company. There is no pressure, no drive to "sign up." Every employee is free to make his own decision. That's all there is to a Person-to-Person Canvass, but in literally thousands of companies, as on the Northern Pacific, a high percentage of employees *want* to build their personal security and are quick to join the Payroll Savings Plan when its availability and many advantages are brought to their personal attention.

Upwards of 8,000,000 employed men and women are enrolled in the Payroll Savings Plan, most of them as a result of Person-to-Person Canvasses. Each month these Payroll Savers invest more than $160,000,000. The 1954 goal is 9,000,000 Payroll Savers. It can be reached if you and other executives will take a personal interest in the Plan and what it means to your employees, your company and your country.

If your company has the Payroll Savings Plan your State Director will be glad to help you organize a Person-to-Person Canvass that should increase employee participation to 50%, 60% or more. If you do not have a plan he will show you how easy it is to install one. Write to Savings Bond Division, U. S. Treasury Department, Washington, D. C.

The United States Government does not pay for this advertising. The Treasury Department thanks, for their patriotic donation, the Advertising Council and

Ten-Point Safety Program

NEW METHODS IN REDUCING ACCIdents of municipal employees were offered by the New York State Division of Safety, through its Safety Coordinator Daniel P. Webster to mayors and other municipal officials in the form of a ten-point municipal safety program.

Webster cited four reasons why municipal accident costs are adding such alarming figures to the tax rolls.

First: "Generally, we are not inclined to be aware or concerned about accidents. . . . We tend to consider accidents as occurring to 'other' people, or in 'other' communities.

Second: "Accident costs are mounting. Not only have we witnessed instances of large awards, but the price of protection has also jumped in recent years, both for compensation and for liability.

Third: "No governmental body, regardless of size, level, or location is immune. Recognition of this fact led to the organization of an entirely new section of Governmental Safety, with groups working at the Federal, State, County and Municipal levels, in conjunction with the President's Conference on Occupational Safety held in Washington in May.

Fourth: "The interpretation of 'responsibility' has broadened. Recent court decisions indicate a greater responsibility of governments for the prevention of accidents. In addition to safety of the public, which is a major concern, we must also recognize our responsibility to employees, and to the public."

To establish public and municipal employee safety programs that will provide personal safety of both those who benefit from services provided and also of those who work to maintain them, Mr. Webster listed the following ten points for mayors to follow:

1. Plan the Safety Program, 2. Indicate executive interest, 3. Determine cause of each accident, 4. Organize safety committees, 5. Detect physical hazards through inspections, 6. Summarize accident cause and cost information, 7. Provide safety information, 8. Provide safety awards and other incentives, 9. Develop fleet safety programs, 10. Periodically appraise safety programs.

Hazards in Industrial Electric Systems

A BETTER UNDERSTANDING OF PROtective grounding systems in industrial electrical power distribution systems was urged at a recent meeting of the American Institute of Electrical Engineers.

"A much better understanding of protective grounding systems is necessary to insure freedom from hazard to life and property," R. H. Kaufman, manager of power engineering, studies unit, General Electric Company, Schenectady, N. Y., said.

An effective equipment grounding system should, he said, under conditions of maximum fault current flow, accomplish the following objectives: "(1) maintain a low potential difference (perhaps 50V maximum) between machine frames, equipment enclosures, conductor enclosures, building metallic structures, and components contained therein to avoid electric shock hazard and unwanted circulating current and (2) incorporate adequate conductance to carry this maximum ground short-circuit current without thermal distress and fire hazard.

"There is good reason to believe that current flow in the equipment grounding system in a-c power systems will not stray far from the power cable over which the outgoing current flows. It follows that the installation of conductive material in an equipment grounding system unless properly located can be ineffective. This is not only wasteful but creates a false sense of security."

Mr. Kaufman said that the tests led to the conclusion that "effective use of the conduit or raceway in the equipment grounding system is paramount," but additional work is needed to develop joints that will not throw fire during a ground fault.

Does Safety Boomerang?

THE DISTORTED READING OF FORmal company communications, the danger of over-communication, and the built-in boomerang in many industrial safety campaigns were among the topics stressed in a speech by one of the nation's few practicing industrial psychiatrists, Dr. Alan A. McLean, Carnegie Fellow in Industrial Psychiatry at Cornell University, Ithaca, N. Y. The occasion was the annual meeting of House Magazine Institute, an association of New York house-organ editors.

Emphasizing that any communication is finally received by a unique individual, whose pattern of reaction is in constant dynamic change, Dr. McLean said, "Some members of management assume that with little or no face-to-face contact, words are fully understood in their original meaning. We know this cannot be so. The comprehension of each individual is based on his feelings and knowledge at the time he receives the communication.

"Management must also reckon with and understand the individual's will to misunderstand, to misinterpret, and to distort the content of formal communication. It cannot be taken for granted that everyone who works for you works with you. Suspicious individuals are prone to conclude that management representatives or management publications have outsmarted them, hiding evil intentions behind innocent and straightforward words."

The industrial communicator must also measure the emotional impact of his text. Dr. McLean cites the case of what should have been an excellent house magazine article on the company's employee medical services. The editor tacked on a somewhat emphatic statement explaining that the company found it unprofitable to hire the physically handicapped. The seeming and doubtless unintended callousness of the latter point cut the ground right out from under the first part.

Over-communication is a danger which house-organ editors and communicators should think about more

and more, Dr. McLean stated. Many necessary industrial actions, such as relocation of machinery or the introduction or elimination of procedures, involve change for individuals. Any communication on these subjects is liable to be anxiety-producing. Citing a case in which a forthcoming change in the physical location of a professional staff unit was the subject of daily communication long before any firm decision was made, Dr. McLean catalogued the interpersonal tensions, resentments, and hostilities which resulted, particularly in the unit's relation to top management. He advised the editors to avoid what he referred to as "communication before the fact." The time to communicate, he said, is when you can answer more questions than you raise.

Approach to Safety

Turning to industrial safety programs, Dr. McLean said, "The major goal of any safety campaign is not merely to instill a sense of duty to rules and regulations or representatives of management, but to encourage employees to be whole-heartedly on the side of responsible behavior. Our greatest natural ally in any such campaign is the individual's inherent (and usually unconscious) desire to behave as a mature, well-balanced person. Such an individual faces day-to-day problems with equanimity, estimates danger accurately and is confident of his power to cope with it, and faces his social responsibility squarely. The less mature, less stable person may in the face of danger react more to his own fantasies of violence, aggression, and fear. The likelihood of the less stable person doing foolish and inappropriate things becomes greatly increased.

"The individual who has frequent injuries is in some way less mature than his fellow workers. It is to this group primarily that safety campaigns must be addressed. It seems to me that most safety education still relies on authoritarian and prolific methods. These techniques are fairly effective in reasonable doses with well-balanced individuals, but become positively dangerous with the maladjusted and unhappy worker, at whom the campaign is primarily directed."

Dr. McLean cited British research on three road-safety films which were shown to both adults and children.

"Didactic, dogmatic, and direct methods of teaching safety are the least satisfactory for conveying emotionally powerful ideas such as discipline, danger, and death," Dr. McLean stated. "We search for the negative aim of avoidance of the provocation of hostility, which is a danger to the unstable individual. To link safety behavior with morals," Dr. McLean concluded, "is to risk a negative response, specially from the unstable individual."

"Safety Maintenance" Salutes . . .

A SAFETY IDEA

Men At Work . . . Followed By Moving Safety Sign

A HIGHWAY SAFETY MEASURE that has eliminated accidents to street lighting service men from automobiles crashing into their parked trucks and at the same time decreased a major source of multiple auto accidents, has been developed by the Broadway Maintenance Corp.

The new mobile safety device, which is a 2 by 6 foot electric sign, mounted on the top of a truck cab, and spelling out the word "SLOW" in flashing electric lights, has just been given a full year's test use. This truck, termed a "back-up" dummy, is always parked 30 feet behind a service truck used by electricians to service street lights, from the top of ladders mounted on the truck base.

Prior to the development of the "back-up" truck, the yearly accident rate of the company's street lighting maintenance electricians had ranged between 1 and 4 serious accidents per year, due to speeding vehicles crashing into the rear end of the parked trucks. The accidents were in all cases severe since they usually occurred while the electricians were at the top of the high ladders. An additional result was often a pile-up of following cars.

The company has no patent on the safety truck and has offered to make the construction details available to any other concern interested in highway safety measures.

Picture by courtesy of Broadway Maintenance Corp.

B R E C K

FOUR WAYS TO PROTECT SKIN FROM INDUSTRIAL DERMATITIS

BRECK pH7 PROTECTIVE CREAM protects the hands against irritants such as lubricating oils, cutting compounds, tar, greases, rubber dust, aromatic and hydrocarbon solvents, fiberglass, paint and iron dust. It forms a non-sticky, invisible film over the skin. Breck pH7 Protective Cream is easily applied. It is easily removed with Breck Hand Cleaner or soap and water.

BRECK WATER RESISTANT CREAM protects the skin against the action of water and water solutions such as liquid coolants, emulsified cutting oils, mist and spray from alkali baths and plating solutions, cement and lime. It covers the skin with a light, protective film which is not slippery or sticky. Breck Water Resistant Cream has a pH value of 8.

BRECK HAND CLEANER helps eliminate the use of harsh, gritty, highly alkaline or defatting hand cleaners. It does a thorough cleansing job, yet is mild and non-irritating to the skin.

BRECK WORK CREAM is used after exposure to degreasing materials and at the end of a day's work. It substitutes fatty materials for the natural skin oils which have been removed. In this way Breck Work Cream helps keep the hands smooth, pliable and lubricated.

A Breck Industrial Preparations Booklet will be forwarded to you upon request.

JOHN H BRECK INC • MANUFACTURING CHEMISTS • SPRINGFIELD 1, MASSACHUSETTS
NEW YORK • CHICAGO • SAN FRANCISCO • OTTAWA CANADA

Industrial Hygiene

Associate Editor
Jacob A. Goldberg, A.M., Ph.D.

Prolonged Illness of Workers

IN RESPONSE TO WIDESPREAD INTEREST IN THE FIRST PROGress Report issued by the Research Council for Economic Security (SAFETY MAINTENANCE & PRODUCTION Feb. 53) on its survey of prolonged absences due to non-occupational disabilities, a Second Progress Report has recently been issued.

This second report deals with absenteeism during 1952 of 22,778 employees and the nature of illness and cost of 1,212 prolonged absences—of more than four weeks duration—during 1952–1953. The entire study will cover the illness experience of a group of 400,000 employees over a one-year period, and is expected to provide much useful information to medical, educational, management, insurance, and other groups.

Some of the highlights of the Second Progress Report are: the rates of prolonged absence were higher for women than for men, and higher among production workers than salaried workers; the average number of work days lost by production workers was twice that for salaried workers; prolonged absences were a smaller proportion of the absences of salaried workers than of the absences of production workers; work days lost during prolonged absences were responsible for 62 percent of the time lost during all absences of one week or more.

The report also shows the major causes for prolonged absence, a break-down of the medical costs, the relation of the gross and net costs to the length of the absence, the percentage of wages that were uncompensated, and how the excess costs were met.

Copies of the Second Progress Report are available from the Research Council of Economic Security, 111 West Jackson Blvd., Chicago 4, Illinois.

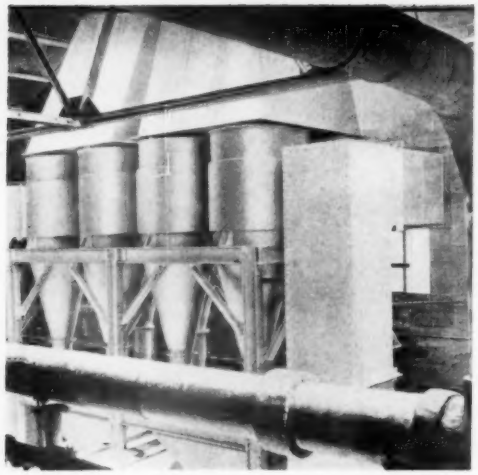
Overqualified Workers

THE OVERQUALIFIED WORKER IS A HAZARD, NOT ONLY to the company which employs him, but also to his own mental health," reports Industrial Psychology, Inc., a national psychological research organization. "The overqualified employee has more psychological potential than the job can absorb. Having too much ability, the job challenges him only for a limited amount of time. Then it becomes routine, repetitive, boring, lacking in stimulation. The end result—the overqualified employee may become as inefficient, and even more dissatisfied, troublesome and annoying, than the underqualified worker."

Studies show that 1 out of every 5 workers presently employed in business and industry is overqualified. The seriousness of their cases ranges from the employee who has ceased to care, to the employee who shows overt neurotic symptoms due to his job frustrations. Few overqualified employees who have reached job saturation are either efficient performers, or well-adjusted personally.

What can management do in this problem of overqualification? Industrial Psychology, Inc. points out two areas in which action can be taken: (1) Spot the overqualified employee. The application blank and interview give some clues as to overqualification. The applicant's education, past job history, etc. give indications of the job level at which he should be placed. The most accurate method for spotting the overqualified employee is psychological testing. Aptitude or intellectual qualification is the basic area to explore; and job-tests, with national standards, will rate the

(Continued on page 42)



By H. C. DOHRMANN, C. A. GALLAER and J. W. SCHINDELER
Buell Engineering Co., Inc.
New York, N. Y.

A good, effective dust collection installation is shown here: *But*, does it fit the job; and, is it being operated efficiently?

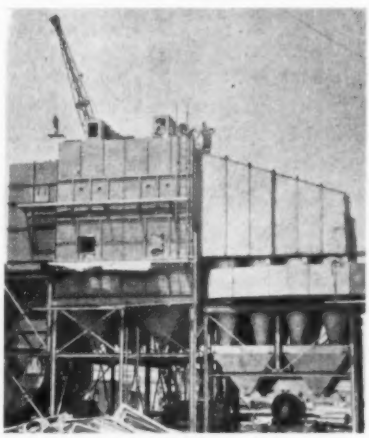
Your equipment may be excellent but...

WHAT ABOUT OTHER DU

REDUCING THE GENERAL LEVEL of air pollution in power plants or industrial operations is primarily dependent upon the effectiveness of dust collectors as well as on their number in relation to the dust sources in a given area. As more plants put in dust collecting equipment we can expect a general improvement in the cleanliness of the surrounding atmosphere. This is found to be true particularly in areas under the jurisdiction of an air pollution control authority or an active civic group.

However, if further improvements are to occur, the effectiveness of all dust collector installations must be maintained at their maximum. Dust control ordinances specify a limit on the allowable dust emission and are usually reinforced by a test at the time of initial installation or acceptance of the manufacturer's guarantee. This, of course, establishes compliance with the existing regulations and is a great advance toward the ultimate goal, but unless management maintains such installations at their expected level of efficiency there is not the gain the record would indicate.

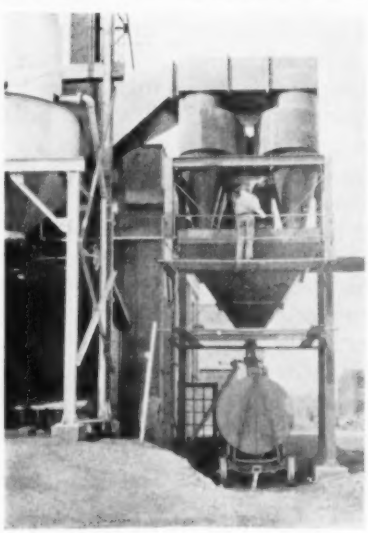
This does not imply an attempt at the impossible task of continuous



DESIGN:

an important consideration, no matter how well the dust collector itself is constructed. If the specifications given to the manufacturer were inaccurate, the collector will not remove all the dust from the air. If the area covered, or the type of work is one subject to a change the installation must be flexible.

PROPER DESIGN IS ESSENTIAL!



OPERATION:

a factor no one can ignore, even with an extremely simple to operate dust collecting system. If an improperly instructed or inadequately supervised employee leaves a hopper open and lets air into the equipment, ignores operating instructions, or if he does not maintain the collector as it was intended to be maintained, he may yet destroy the system's value.

GOOD OPERATION IS IMPERATIVE!

policing. By contrast to visual checking to assure compliance with smoke regulations, any endeavor to check solids discharge on a comparable scale would be impractical. If an indicating instrument were available to measure dust loading with the same ease with which temperature is measured with a thermocouple this might be possible. The difficulties and time involved in making such a determination at the present stage of dust control engineering are, however, too great. We must therefore depend on educating dust collection equipment users on the importance of different

ST COLLECTION FACTORS?

phases of the dust collection problem affecting the degree of air pollution.

3 Phased Problem

There are 3 phases to the problem. The first has to do with the basic design of the dust collector; the second, with the proper selection of the equipment most suited to specific conditions; and the third, with the continued operation of the equipment at its highest level of effectiveness.

The basic design of dust collectors is a subject too vast to discuss in detail in one article and would be only of academic interest to the user of collectors. However, there are some general principles with which he should be familiar.

It is fundamental to each dust collecting problem that the total cost of the installation, which includes capital investment and operating expense, varies directly with the required efficiency. An increase in efficiency of cyclone collectors is obtainable by modifying the cyclone shape at the expense of additional pressure drop and/or an increase in the size of the cyclone. This is not a contradiction of the popular concept that efficiency increases with decreasing diameter, but rather points up the fact that, while fundamentally a cyclone of given proportions will be more efficient as its diameter is reduced, it may be much less efficient than another cyclone of 5 times its diameter but which utilizes a more effective shape. Such a cyclone would of course be even more efficient in a comparable diameter but its volumetric size would be greater.

The cost of an electric precipitator will increase with an increase in required efficiency. In this case the additional cost is primarily in capital investment, the operating cost in any case being a nominal part of the total. Other types of dust collectors will have a similar cost-efficiency relationship, with the possible exception of devices which use the filtering principle in their operation.

It is evident then that the specification of efficiency will determine in large measure the cost of the installation. In addition, the type of equipment will affect the cost. It is, therefore, important in selection that the most effective equipment or combination of equipment be utilized for the particular conditions.

Equipment Selection and Installation

There are 2 basic reasons why dust collectors do not function as planned, even though the operation of the equipment is sound:

1. Improper selection of equipment.
2. Poor duct design.

Selection of equipment for a specific application is, of course, an economic problem. It goes without saying that almost any degree of dust collection can be obtained. For example, on a boiler installation, the flue gas could be passed through several stages of mechanical collectors, thence through a 99 percent electric precipitator, then a bag filter and finally a wet scrubber. No doubt the collection results would be excellent, but obviously the installation and operation cost as well as the space requirement would be prohibitive.

Improper selection of equipment, of course, means that collectors of too low an efficiency have been selected for too fine a dust; or in the case of electric precipitators, the electrical capacity of the precipitator is not suited to the electrical properties of the dust. The responsibility for a situation of this sort is difficult to determine, but it would not be unfair to place a large part of the responsibility on the fact that the purchase specifications sometimes do not accurately reflect the actual plant conditions.

Manufacturers Recommendation

The dust collector manufacturer makes the recommendations on the basis of information supplied, recommending minimum equipment to do a satisfactory job. The reasons for this (as mentioned before) are that units of overly high performance are expensive in terms of initial investment, space and power consumption, and on the basis of the vast majority of purchase specifications, the higher cost of such units is not justifiable. Then, too, no manufacturer would jeopardize his competitive position by offering equipment which is more efficient than required by the specifications and, hence, too expensive. Fortunately for the communities, the dust abatement officers, the general public, and incidentally, fortunately for the dust collector manufacturers,

too, the purchase specifications submitted to the latter are usually accurate, and the equipment supplied does an adequate job; provided, of course, that the equipment is properly installed and operated.

It is only in those few cases where initial data is incorrect or inadequate that collector performance may not come up to expectations on an overall efficiency basis, although the collector is operating at its anticipated performance. In the case of the mechanical dust collector, if the actual dust handled is much lighter or has a greater preponderance of very fine particles than originally anticipated for that particular installation, then overall efficiency will suffer and stack emissions will increase.

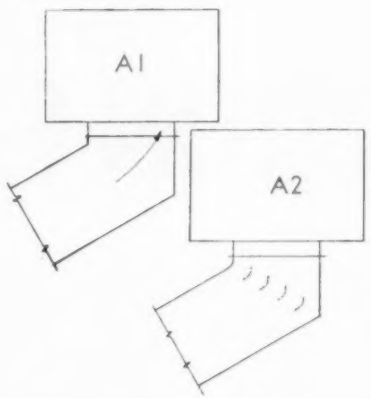
The only way of handling a problem of this sort is to make doubly sure that the original purchase specifications are accurate; or, if it is impossible to obtain accurate data, then to be very conservative in the specification of equipment. It is better to over-design an installation, rather than to purchase the least expensive equipment available, only to be forced to replace this with better equipment to meet a dust ordinance.

Effect of Gas Volume

Another important consideration, the effect of gas volume on performance we will discuss later. Suffice it to say now that, for a mechanical collector, an increase in collector gas volume over specifications will produce an imperceptible increase in collection efficiency, and a considerable increase in pressure drop through the collector, while a decrease in volume will bring somewhat lower efficiency and pressure drop. For an electric precipitator any increase in gas flow over design specifications, will result in a decrease in collection efficiency.

On the question of duct design it can safely be said that more, otherwise excellent, installations have been rendered ineffective due to poor inlet connections than for any other reason. We will not delve into the inlet problems of electric precipitators, but will deal only with some of the problems of ducting encountered with mechanical dust collectors.

Ideally, there should be about 5 equivalent pipe diameters of straight duct work before the inlet of the dust collector. In practice this seldom, if ever, occurs; and, it therefore becomes necessary to design and install duct work which will get the dust laden gas to the dust collector inlet with a minimum



The off-angle duct approach in Fig. A1 concentrates most of the dust-collecting work on the units on the right side of the duct entrance, upsetting the system's operation. In cases where the polluting material to be removed is non-corrosive, bent vanes can be installed to correct the flow of air to the collecting units; (This is clearly shown in the Fig. A2).

effect on collector performance. In the interest of proper collector performance, the manufacturer is extremely interested in the type of inlet connection the purchaser intends to furnish on the dust collector; indeed, it would be highly desirable if every purchaser of dust collecting equipment would submit his proposed duct work to the dust collector supplier for comments, prior to finalizing the design of these ducts. In this way any obvious fault of the duct design, purely from a dust collection point of view, could be eliminated. It is not implied that the dust collector manufacturer design the duct work for a customer, the purpose is only to guide the customer's design so that the collector performance will not be nullified by something in the duct design which might have been avoided.

It is regrettable and disheartening to know how few purchasers of dust collector equipment pay the proper attention to duct design, and how few consult the supplier on the proper installation of the equipment.

"Poor Approach" Conditions

It is always desirable to avoid bends at the collector inlet, particularly if these bends come from the left or right. As seen in fig. A-1, a gas stream entering a mechanical collector from the left will cause the largest mass of gas and dust to be handled by the individual cyclones or tubes on the right (or opposite) side of the dust collector. These individual units, by handling a higher proportion of the gas, will incur a higher draft loss and a lower static pressure at the individual units' cone or tube outlet. This in turn creates a recirculation between those units handling a lower volume of gas and those handling a higher volume of gas, and dust collector performance will suffer, with particularly high losses in the very fine particle size range. Naturally, the greater the number of individual units serviced by an individual hopper, the greater this problem becomes.

One method of overcoming this is the use of turning vanes, as shown in fig. A-2. These are effective and reduce draft loss across the bend, but they are subject to erosion and, therefore, frequent maintenance. Also some dusts tend to build up on their surfaces. Vanes of this type can only be recommended where the dust is not abrasive and does not have a tendency to build up and pack on a surface.

Where it is impractical to install vanes because of dust characteristics, it is usually possible to rearrange the installation to minimize the effect of poor approach conditions.

No matter how well designed a dust collector may be, nor how admirably it may be suited to a particular installation, it cannot possibly do a satisfactory job of dust collection and air pollution abatement unless it is correctly operated.

All too often an excellent dust collector is allowed to perform inefficiently because of faulty operation. This, to some degree is understandable, because every plant is primarily concerned with the manufacture of a product, be it cement, limestone, paving material, or electricity. All equipment affecting production is carefully maintained and operated for maximum output. However, when installed for air pollution abatement, a dust collector has no direct effect upon plant output, and its operation and maintenance is apt to be considered secondary.

Consider first the operation of that simplest of all types of dust collectors—the cyclone. In general there are only 3 major items which need be checked in order to assure maximum collection efficiency in a cyclone:

1. The cyclone should handle the volume of gas for which it was designed. Naturally, the basis of collection efficiency in a cyclone is the centrifugal force impressed upon the dust particles. If the gas velocity through the cyclone is less than that for which it was designed, the centrifugal force exerted upon the dust particles will be reduced and collection efficiency will be lower. In the vast majority of installations, cyclones are correctly sized for the gas volume at the time of installation, and work efficiently. However, very often, changes occur in methods of production in a particular plant, and gas quantities and/or temperatures may change without reappraisal of the dust collector installation. In cases where the gas volume has decreased appreciably it is essential to reduce the collector capacity, to retain efficiency. Since most cyclone installations consist of multiple cyclones arranged in parallel, it is usually quite simple to blank off

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On and ready for action in seconds!

...breathe cool, fresh AIR — not oxygen!

Don't waste valuable minutes at the scene of the emergency for your breathing equipment to start generating. Use the Scott AIR-PAK and you are ready to go in seconds. The AIR-PAK supplies all the cool, fresh air you need. You can go directly to the trouble source without concern for the concentration of gas or vapor because you are absolutely independent of surrounding atmosphere with the AIR-PAK.

No complicated training or practice is necessary. Cool air operation prevents fogging. Using air instead of oxygen inspires confidence in the most inflammable atmosphere. Clear, convenient gage assures dependable check on air supply.

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SAFETY EQUIPMENT DIVISION

SCOTT AVIATION CORP.

217 ERIE STREET LANCASTER, N. Y.

Canada: Safety Supply Co., Toronto — Branches in principal cities
Export: Southern Oxygen Co., 15 West 57th Street, New York 19, New York

(For details, use Key # U-13 on card on page 73)

one or more cyclones, maintaining the required velocity in the remaining cyclones.

(2) The second major cause of operating difficulty in a cyclone installation is leakage of air into the dust hopper. Most cyclones are installed before a fan (in order to protect the fan wheel from abrasion), and consequently the static pressure in the dust hopper is below atmospheric pressure. Any air that leaks into the dust hopper will flow up the cyclone vortex picking up dust which has already been collected by the cyclone. The greater the leakage, the more dust will be lost, with the loss consisting chiefly of the finer particles. Therefore, if the hopper is not properly sealed, outside air will leak into the hopper and decrease the collection efficiency of the cyclone. In this connection we would like to relate an experience of one of our field men, which while not commonplace, nevertheless illustrates this problem as well as the necessity for continuing supervision of the dust collector operation.

"Just One Complaint"

Some years ago one of our servicemen visited a plant in response to a complaint. Upon arrival he found at first glance that the complaint was justified, there was dust all over the plant and the neighborhood. He inspected the collector installation and found the hopper valve tied open, with a veritable gale of air sweeping into the bin. Only a very few pounds of dust had managed to fall through this air blast into a wheelbarrow which was resting below the hopper. The rest of it was being swept up through the cyclone and induced draft fan and finally discharged from the stack. Our man questioned the laborer whose job it was to empty the dust hopper into the wheelbarrow and cart away the dust. It seemed he was quite proud of his idea of tying the hopper valve open. Before he discovered it, he had been spending most of his time pushing wheelbarrow loads of dust to the dump, but with his new system he was able to comply with his orders to keep the hopper empty at all times, and yet make only one trip a day to the dump with the wheelbarrow. He was rather disappointed when told that the valve would have to remain shut.

(3) The third major factor which can reduce the collection efficiency of cyclone collectors is overfilling the dust hopper. A dust hopper, like any container, can only be filled to its top, and then it must overflow. In the case of a cyclone dust hopper, the overflow, of course, is discharged thru the stack. The cyclone dust hopper, however, cannot even be filled to its top but only to a given level, depending on the type of cyclone. Above this level dust is picked up by the cyclone vortex and discharged to the atmosphere. It is possible to fill the hopper still further, but the collection efficiency will continue to decrease until a point is reached where the efficiency is zero and no more dust can be stored in the hopper.

Some few plants have been found in which the hopper was allowed to fill completely, causing collection to cease entirely; but it is more common to find the collection efficiency periodically impaired to some degree because too much dust has accumulated in the hopper. This can be easily avoided by increasing the emptying cycle from, say, once a shift, to twice a shift. However, the true amount of dust collected is seldom recognized by personnel. For this reason, it is necessary to equip dust collectors with an adequate dust withdrawal system.

Operating Problems of All Kinds

Before leaving the question of cyclone operation we might mention a few of the less common operating problems encountered. Leaks that develop in the equipment should be repaired, and any interior work necessary should be done to maintain the original smooth contour. Collectors should be insulated when handling a moisture laden gas near its dewpoint. All foreign objects such as planks, overalls, and lunch buckets should be removed from the collector before starting up. (This is not nearly so rare an occurrence as might be imagined.)

In spite of their simplicity, cyclone dust collectors still must be correctly operated in order to function properly.

The electric precipitator is a different "type of animal" from the cyclone, and requires more careful maintenance. It is impossible in a single article to discuss all aspects of precipitator operation, but let's cover some of the high points.

Personnel Instruction

All personnel concerned with the operation and maintenance of electric precipitators should read and understand the manufacturers instruction manual and operating instructions. To be certain that all operating personnel thoroughly understand equipment, it is advisable to give individual instruction in the performance of all normal and emergency operations of the precipitator. Always remember that, in most cases, an electric precipitator is uniquely designed for a specific job, and its operation is not necessarily the same as any other precipitator, even in the same plant.

In operation, the collection efficiency of a precipitator can be decreased by many operational factors. Needless to say, the dust hopper should be free from leaks and must not be overfilled, just as with cyclones. In addition, the precipitator should not be expected to handle more gas than that volume for which it was originally designed, without sacrificing some efficiency.

Relatively minor changes in plant processes or methods may change properties of the gas or dust related to precipitator performance to a considerable degree, and necessitate readjustment of the precipitator operating level.

All electrical instrument readings should be routinely observed and recorded. Any sudden deviation may indicate an abnormal condition in need of correction. It should be

noted that the inability to hold the design voltage on the precipitator without excessive electrical short circuits may be due to a reduction in the electrical clearance at some point in the precipitator. In this case the precipitator can, of course, be operated at a reduced voltage, but only at some sacrifice in collection efficiency. The proper procedure is to correct the condition as soon as possible and continue to operate the precipitator at its designed voltage.

There are a number of factors which may cause the short circuits. A build-up of sticky dust on the collecting electrodes may occur during a succession of equipment start-ups and shutdowns. An emitting electrode wire may break and tangle within the precipitator. Or, more seriously, the entire precipitator may become misaligned due to settling of the foundation or uncompensated thermal expansion. These latter faults, however, can usually be prevented by good initial design.

A lubrication schedule for all moving parts requiring oil or grease should be adhered to, and, of course, all worn or defective parts must be promptly replaced.

Negligence

All electric precipitators are sold with an overall collection efficiency guaranteed for certain operating conditions. Most of these precipitators are tested by the manufacturer shortly after installation, and adjusted to attain the guaranteed efficiency. However, unless the purchaser maintains and operates the precipitator properly, it may go through a large portion of its economic life collecting dust at a reduced efficiency.

How many tons of fly ash and other contaminants are needlessly discharged into our atmosphere through negligent operation of good dust collection equipment? No one knows, but it is a figure that can, and certainly should be, reduced.

From a report presented to the Air Pollution Control Association.

Pictures by courtesy of Buell Engineering Co., Inc.

a little thing like a salt tablet* can be a big safety factor

Heat fatigue, especially during summer, is one of your plant's biggest problems. Unless the body salt lost through sweating is replaced, your workers not only become tired and less productive, but also may suffer serious heat prostration. As a result, costly accidents can occur.

***Morton Yellow Impregnated Salt Tablets** maintain the worker's body efficiency. Their controlled action gives *immediate* relief *without causing nausea,* as each salt crystal is thoroughly impregnated by a special patented process that controls the tablet's rate of dissolving. In this way, salt is replaced *immediately,* but at a *gradual* rate.

Assure your plant a high level of safety during *hot* summer months by ordering your supply now! Morton Patented Impregnated Salt Tablets are now included in a new Disposable Dispenser. A plastic and a heavy-duty aluminum dispenser are also available, as are *plain* salt tablets.

If your local safety equipment distributor cannot supply you, write:

MORTON SALT COMPANY
Dept. S-A 28, 120 So. La Salle St.
Chicago 3, Illinois

(For details, use Key # U-14 on card on page 73)

Stop a Wildcat!

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N-54 heavy weight all neoprene 14" length. Curved fingers, Super-Safe grip.

Milled neoprene makes tough Stanzoils stand extra hours contact with oils, acids, caustics and Solvents. *Milled* neoprene has higher tensile, tear resistance than *any other* oil resistant rubber.

Super-Safe grip creates confidence, speeds work —handles wet slippery objects as if dry.

Only a liquid-tight glove gives positive physical protection from conditions that cause dermatitis.

32 PIONEER styles, weights, sizes and colors. Stanzoil catalog quickly shows how to pick best, most economical glove for each job. Write for it today!

The **PIONEER** Rubber Company 244 Tiffin Road Willard, Ohio

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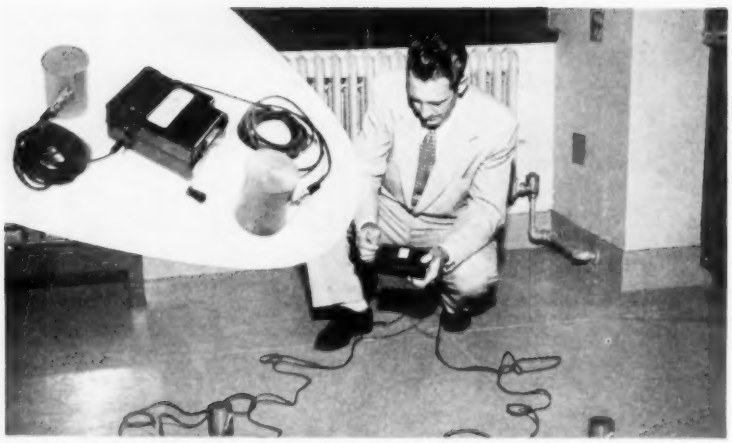


INSTRUME

SAMPLING—(left, above)

A portable impinger apparatus is used to test the air in chemical plant for lurking dangerous toxic vapors.

DETERMINING—(above)

An explosimeter helps to find out whether dangerous amount of combustible vapors exists in sump well.

CHECKING—(right, above)

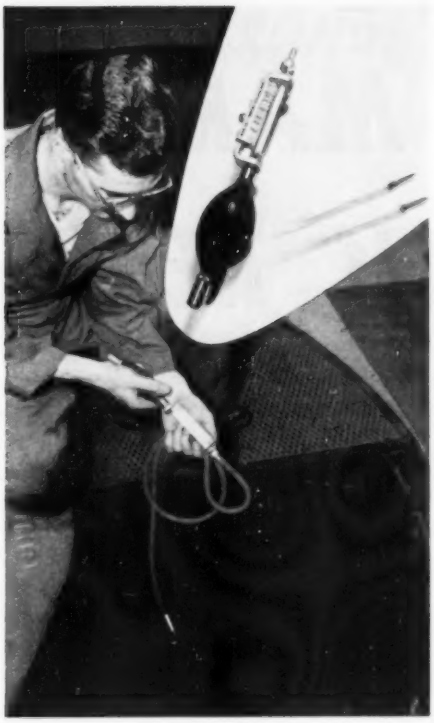
Brake efficiency of a fleet of motor vehicles is tested easily and accurately by a decelerometer device.

MEASURING—(left, above)

Conductivity of hospital operating room floor is measured by "megger" to protect against static explosion.

FINDING—(left)

Vane anemometer is used to check efficiency of exhaust system in painting and sand blasting operations.



NTS: HYGIENE'S WEAPONS

TESTING—(above)

Concentration of hydrogen sulphide in sewer is shown on instrument as poisonous gas darkens the ampule.

COUNTING—(right, above)

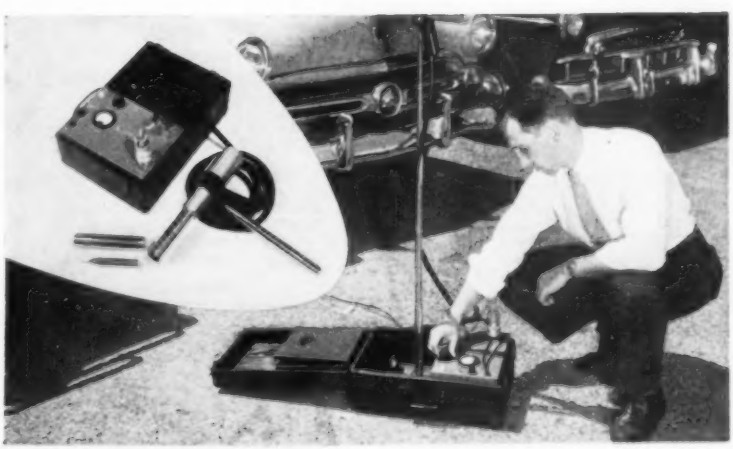
To prevent silicosis, dust counter checks amount of injurious particles for too dangerous concentrations.

DISCOVERING—(right, above)

A carbon monoxide tester is used here to find trucks which throw off gas fumes because of motor defects.

COLLECTING—(right)

An electrostatic precipitator is used to collect corrosive industrial dust which may ruin parked automobiles.

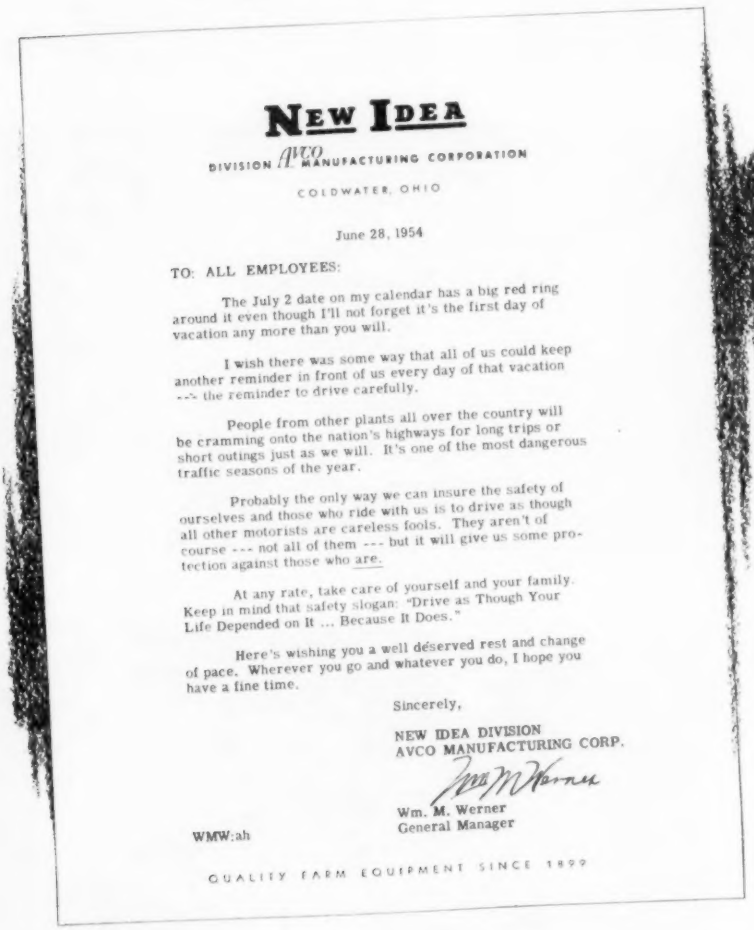


Reprinted from the "North American Fieldman."

SAFETY MAKES... GOOD PUBLIC RELATIONS

This New Idea Letter Is

EVERYBODY'S BUSINESS!



NEW IDEA

DIVISION AVCO MANUFACTURING CORPORATION

COLDWATER, OHIO

June 28, 1954

TO: ALL EMPLOYEES:

The July 2 date on my calendar has a big red ring around it even though I'll not forget it's the first day of vacation any more than you will.

I wish there was some way that all of us could keep another reminder in front of us every day of that vacation --- the reminder to drive carefully.

People from other plants all over the country will be cramming onto the nation's highways for long trips or short outings just as we will. It's one of the most dangerous traffic seasons of the year.

Probably the only way we can insure the safety of ourselves and those who ride with us is to drive as though all other motorists are careless fools. They aren't of course --- not all of them --- but it will give us some protection against those who are.

At any rate, take care of yourself and your family. Keep in mind that safety slogan: "Drive as Though Your Life Depended on It ... Because It Does."

Here's wishing you a well deserved rest and change of pace. Wherever you go and whatever you do, I hope you have a fine time.

Sincerely,

NEW IDEA DIVISION
AVCO MANUFACTURING CORP.

Wm. M. Werner
General Manager

WMW:ah

QUALITY FARM EQUIPMENT SINCE 1899

on your vacation too — DRIVE CAREFULLY

EMPLOYEE SAFETY has become part of the community public relations program of the New Idea Division of Avco Mfg. Corp. The Division has been publishing institutional types of advertisements to keep its employees and the residents of its plant communities better informed about the company and its progress.

Copies of the advertisements are mailed to employee's homes one week in advance of publication and have covered such subjects as the contribution of the company's payroll to the community's welfare, the important role played by the company's salesmen, the company's employee benefit program, and the importance of research and development to future job security.

Sometimes the advertisements reproduce letters to employees carrying important messages that would be of interest to the community as a whole. One such advertisement, which is reproduced here, was inspired by serious automobile accidents suffered by one executive of the company and the son of another. The message was distributed early in the summer on the eve of the company's plant-wide vacation shutdown.

The advertisement was concerned with the welfare of the employees during the vacation period, which can be a more hazardous period for industrial employees than when they are working in the plant. Distributed to employees of the New Idea Division plants in Coldwater, Ohio; Fort Dodge, Iowa; Collegeville, Pa.; and Sandwich, Ill., the bulletin not only sells safety but also makes for good public relations.

SEND THIS PERSONAL SAFETY MESSAGE

TO EVERY ONE OF YOUR EMPLOYEES!

Safety is made attractive... vivid... colorful...

each worker clearly sees how safety benefits him.

You get enthusiastic safety cooperation instead of

tolerance... from every employee... every month.

YOUR
Safety News
PUBLISHED IN THE INTEREST OF YOUR SAFETY
THE JOHN DOE COMPANY, INC.
PROTECT YOURSELF
3
WAYS
There are three safe practice ways that do the most good in keeping free of accidents, all based on your personal desire to know safety and keep yourself safety-minded by studying the hazards of your work. They are
1 Make sure all guards are in place and working and wear the personal protective equipment your job requires.
2 Learn the safe way to do a job and do it just that way.
3 Report, avoid or eliminate all unsafe conditions.
As we see it: Safety is part of every job and like any craft it requires skill.
John Doe

Size, 5½" wide x 8⅓" deep

...talks the worker's language!

Full of color, pictures, humor and snap, it makes safety interesting and down-to-earth. 12 times a year it covers every accident hazard. Nationwide, leading industrial firms state it's the *only safety paper their employees will read* . . . and take home to their families.

It gives you the advantages of personal contact, saving time and money. When it prevents one Lost Time accident, it has more than paid its cost for the year. Try it... it works!

Your Imprint Here!

makes YOUR SAFETY NEWS your own publication... a good-will ambassador ... another force for better industrial relations.

Every employee feels bucked-up by a note from the boss. If you desire, your facsimile signature can be printed here.

Your Signature Here

NOTE:
Your Safety News is designed to promote better employer-employee relations. Every item is carefully weighed from this viewpoint.

INSIDE PAGES
(pages 2 and 3)

So Goes the World
Lions & Machinery have Hungry Jaws
IF YOU DON'T HAVE TO TWIST ITS TAIL
NEVER REACH INTO MACHINERY WHILE IT IS RUNNING!
Guard Well
WANTED
from the CARELESS ACTS of others the WISE MAN corrects his own
SAFETY SHOES
WORK OVERTIME
Dress for Safety
SAFETY SHOES
FALLS
FALLS KILL 60 EVERY DAY

IN YOUR EMPLOYEE'S INTEREST

Your employee's self interest in his own safety is always emphasized. Even household hazards are covered to keep him safety-conscious every minute, not only in the plant, but at home and on the way to work.

CHOCK-FULL OF ILLUSTRATIONS

Artwork is carefully chosen to lodge home each point. The cartoon style makes YOUR SAFETY NEWS as familiar and as welcome as the Sunday supplement.

THE "FOLKSY" APPROACH

Keeping the contents folksy, adding the grace note of humor, delivers your safety message with a nudge instead of a bludgeon. Your monthly chat gets enthusiasm instead of tolerance.

VIVID COLOR

Generous use of color gives sparkle, adds to the attention-riveting qualities of YOUR SAFETY NEWS. Each issue is as lively as any news-stand favorite.

HOW TO ORDER

YOUR SAFETY NEWS may be ordered with either the Standard imprint or with your Own Special Imprint. The Standard Imprint reads PLEASE COOPERATE FOR THE SAFETY AND HEALTH OF ALL . . . signed . . . A SAFE WORKER.

You can personalize YOUR SAFETY NEWS with the name of your firm and the name or facsimile signature of a company representative as illustrated. Give full instructions for your Special Imprint on the order blank below.

Item (1) FIRM NAME. Please show the name of your firm exactly as it is to appear.

Item (2) INDIVIDUAL NAME OR SIGNATURE, if desired. On a sheet of white paper, please show, in black ink, the individual name or signature, if desired, which is to appear each month on the first page of YOUR SAFETY NEWS.

NOTE: Although a personal signature is effective, some firms substitute: SAFETY DEPARTMENT, YOUR SAFETY COMMITTEE, A SAFE WORKER, etc.

Clip Out & MAIL TODAY!

ALFRED M. BEST COMPANY, Inc. • 75 Fulton Street, New York 38, N. Y.

Gentlemen:

Until further advised, please publish for us each month..... copies of YOUR SAFETY NEWS at .....¢ each.

☐ Special Imprint ☐ Standard Imprint

Item (1) — Our Special Imprint should appear as follows:

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Item (2) — (if desired) - Please imprint the name or signature shown on the attached sheet of white paper, or the following:

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INVOICE TO:

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Per Month	Your Special Imprint	Standard Imprint
6,001 copies and over	2½¢ each	2¢ each
3,001 to 6,000 copies	3¢ each	2½¢ each
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200 to 500 copies	5½¢ each	4½¢ each
100 to 199 copies	6½¢ each	5¢ each
25 to 99 copies	*	5½¢ each

CARBON TETRACHLORIDE

By MARK M. LUCKENS
Consultant in Industrial Hygiene & Toxicology, New York

Compound: Carbon Tetrachloride
Synonyms: Tetrachlormethane, Perchlormethane, Tetrachloromethane, Perchloromethane, Tetra
Formula: CCl_4 Molecular Weight: 153.84
Appearance: Clear, colorless liquid
Odor: Ethereal, sweetish odor (pleasant to some people but disagreeable to others)
Specific Gravity: 1.589 (25°C) Refractive Index 1.45732 (25°C)
Vapor Pressure: 114 mm Hg (25°C) Vapor Density: 5.3 (air = 1)
Melting Point: −22.0 to −22.8°C Boiling Point: 76.7°C
Flash Point: None, not flammable Explosive Limits: Not explosive
Autoignition Temperature: None, not flammable
Solubility in water: 0.08 grams/100 ml (20°C) (one ml dissolves in about 2000 ml of water)
Solubility in organic solvents: Miscible in all proportions with alcohol, chloroform, ether, petroleum ether, benzene, and similar organic solvents, carbon disulfide, oils, etc.

Industrial Uses: Solvent for oils, waxes, resins, lac, rubber, varnish; degreasing of metal parts; dry cleaning of clothing; spotting agent; type cleaner; insecticide; extraction of fats and oils; fire extinguishing fluid; chemical intermediate; etc.

Medicinal and Other Uses: Anthelmintic; delousing agent; dry hair shampoo.

Maximum Allowable Concentration: American Conference of Governmental Industrial Hygienists: 25 ppm.

Toxic Action: 1. Carbon tetrachloride causes severe kidney and liver damage. This compound is also a narcotic and an irritant. In spite of its widespread use, it is one of the most toxic of the common solvents.

2. The obese; the undernourished; alcoholics; those suffering from liver or kidney disease, diabetes, enlarged thyroid or thymus, lung disease, and high blood pressure are predisposed to poisoning from this compound.

Symptoms of Exposure:

A. Inhalation—1. Acute: Tearing and burning of the eyes, nausea, dizziness, lack of coordination and balance, mental confusion, unconsciousness, headache, vomiting, abdominal pain, dark colored urine (this last symptom usually sends the exposed individual to his physician); this is followed by jaundice, oliguria, and anuria, and may end in death. Symptoms may be delayed as much as a week.

2. Chronic: Headache, dizziness, gastric distress, loss of appetite, weakness, fatigue, jaundice, visual changes including spots before the eyes, constriction of color fields, blurring.

B. Oral Ingestion—gastro-intestinal pain, nausea, vomiting, diarrhea, bloody stools. Ingestion of as little as 4 ml has been known to cause death.

C. Skin: Dermatitis due to defatting action of carbon tetrachloride; may be a sensitizer.

D. Note: Habituation to this material is known to occur.

Laboratory Diagnosis: No objective test has been worked out for the diagnosis of poisoning due to carbon tetrachloride. It has been suggested that examination of the peripheral visual field may be useful in revealing early intoxication. A low glucose tolerance combined with a history of exposure to the solvent may indicate intoxication.

Detection and Analysis: Carbon tetrachloride gives the general reactions of the chlorinated hydrocarbons. Most quantitative methods depend upon decomposition by heat in the presence of moisture to yield hydrochloric acid which can then be determined by any of several methods. Among the satisfactory procedures for determining this compound in air are:

1. Combustion procedure . . . this is described in *U. S. Public Health Reports*, Vol. 56, page 1021 (1941) and in a paper by Goldman and Seegmiller in the *Journal of Industrial Hygiene and Toxicology*, Vol. 25, page 181 (1943).

2. Absorption — hydrolysis procedure . . . this method involves the absorption of silica followed by hydrolysis with potassium hydroxide. A variation of this procedure is in an article by Cralley, Shea, and Cralley in the *Journal of Industrial Hygiene and Toxicology*, Vol. 25, page 172 (1943).

3. Colorimetric procedure . . . a colorimetric procedure has been described recently. The writer will be happy to send an outline of the method to those who write in requesting it.

Storage and Handling: Carbon tetrachloride is a nonflammable toxic liquid whose vapors are heavier than air. It should be stored in cool well ventilated places away from open flames and high temperatures. Although it will not burn, it decomposes at high temperatures to yield highly toxic products. Since it is heavier than air, precautions should be taken that vapors do not collect at floor level, in pits, depressions, or basements where it may be used or stored. When entering tanks or enclosed areas where it is suspected that vapors of this compound have accumulated, goggles should be worn and a self-contained air source or an

approved air line type respirator should be used. The individual should wear a lifeline with harness connection and an attendant should be present to pull him to safety, if necessary. Working areas where carbon tetrachloride is used must be adequately ventilated and their atmospheres checked frequently to determine that the MAC has not been exceeded. Gloves should be worn when handling the solvent. Clothes soaked with it should be removed as soon as possible.

Precautions and Remedial Measures: 1. Establishment of a standard operating procedure for handling this solvent. Employees should be impressed with the toxicity of this material and should be trained in proper handling procedures.

2. Adequate exhaust ventilation should be provided where this material is used. It should never be used in an enclosed or poorly ventilated space.

3. Less toxic materials should be substituted where possible.

4. Habitual drinkers and those with histories of renal or hepatic disease should not be employed at tasks involving the use of this chemical. Preemployment examinations should be given prospective handlers of this compound to screen out those who may be predisposed to poisoning by carbon tetrachloride.

Fires: Carbon tetrachloride should not be used on fires *in enclosed spaces* because of the lack of ventilation.

Overqualified Workers

(Continued from page 29)

applicant at 5 levels of psychological qualification (under-qualified, minimum-qualified, well-qualified, best-qualified, over-qualified) for various job titles in business and industry. These tests are given, scored and interpreted within a company by its personnel staff. Another psychological tool which has recently been added to combat the problem of over-qualification is a measure of contact versus non-contact personality—to determine the employee's extrovert or introvert tendencies. A basic rule for sound personnel administration is that no employee should be placed on a job unless he qualifies in terms of basic psychological traits for that job, and his psychological qualification (and thus over-qualification) for higher-level jobs is known. (2) Handle the overqualified employee properly. There is nothing wrong in placing an employee in a job for which he is overqualified, providing the situation is handled properly. If the employee is a long-term employee, he should be informed that this assignment is a definite part of his training process; and while the company realizes he has more ability than this job can absorb, he will not be left on the job indefinitely. (This statement should not be made to all employees, but only to those with bona fide qualifications for higher-level jobs.) In hiring temporary or part-time workers, the overqualified person is often a very good risk, since he learns quickly and the assignment is over before he can become bored.

The Industrial Nurse

Editor
Rosamond J. Webster
R.N., A.M., Ph.D.

Heart Disease Mortality

FACTS ON CURRENT HEART disease mortality are available in an insurance company statistical bulletin. Although rheumatic fever is now first among the causes of heart disease in the age range 5–34 years among males and 5–44 years among females, arteriosclerotic heart disease—primarily coronary artery disease—overshadows all other types of heart disease in the aggregate.

Among insured males in the company reporting the data, and covering all ages combined, arteriosclerotic heart disease, with or without hypertension, accounts for as much as 70 percent of all deaths from heart disease, increasing rapidly in relative importance with advance in age. Among females the proportion is appreciably smaller. Hypertension heart disease, which is the second most important category in mortality from heart disease, shows about the same death rate for both sexes, and accounts for a much higher proportion of heart deaths among women than among men. Syphilitic heart disease currently constitutes a very small part of the total death rate from heart disease. The use of antibiotics has been helpful in reducing the evidence of syphilitic heart disease, as well as in the control of rheumatic heart disease.

The psychoneurotic or the hypochondriac, however, can create real difficulties for himself, especially if he is of middle years and worries each time he hears of someone dying from heart disease. It is in this area that the industrial nurse can be of great help.

Stress Disorders

THIS TERM HAS BEEN APPLIED to nervousness and neuroses, arthritis, overweight, high blood pressure, gastric and duodenal ulcer, gout, coronary disease, asthma, bronchitis, and many other conditions. According to some, all the stress disorders to a considerable degree are attributable to the strains of occupation. Others believe that there has been undue emphasis placed on the responsibility or work pressure for some or all of these conditions.

People vary widely in their ability to withstand speed, repetition in work processes, noise, light, gases, fumes, nervous irritation, and other routine situations com-

mon in industry. Therefore, it is difficult to evaluate individual tolerance. It is likewise difficult to measure degrees of occupational stress.

While the problem remains largely one for the industrial physician to deal with, in many situations it may be the full-time industrial nurse who will be the first to notice symptoms which could be the first clues to stress disorders. But all signs, whether mild or severe, of some of the conditions listed, do not necessarily arise from the work experience. Previous medical history, hereditary factors, home environment, family disturbances, financial difficulties, economic insecurity are but some of the primary, or at least, contributory factors. The industrial nurse can be of considerable help in sifting out complaints and referring individuals to the medical director for consultation when such action seems desirable. In many instances, the workers may confide in the nurse and hesitate to take their troubles to the industrial physician.

The President Proposes

PRESIDENT EISENHOWER HAS PROPOSED an amendment to the Social Security Act to preserve insurance rights of individuals with extended total disability. Under this proposal a disability is defined as "inability to engage in any substantially gainful activity by reason of any medically determinable physical or mental impairment which can be expected to result in death or to be of long continued and indefinite duration." Persons found to possess such a disability would have social security benefits frozen so that at the age of 65 they would receive whatever benefits they would have been eligible for had they been 65 at the time of disability.

It has been estimated that there are now about 2,000,000 disabled persons who could be rehabilitated if adequate facilities were available. Under the present rehabilitation program only 60,000 of these disabled individuals are returned each year to full and productive lives. Meanwhile, about 250,000 additional men and women are disabled annually. The President has further indicated that his goal is to provide rehabilitation facilities for 70,000 disabled persons in 1955, and by 1959, with gradually increasing state participation, to reach the goal of 209,000 rehabilitations each year.

Three bills have been introduced in Congress aimed at helping to carry out these and additional recommendations concerned with the disabled and their effective rehabilitation. As in many other instances involving such large financial, social, medical, legal and related problems, there are varying opinions as to the desirability and utility of specific provisions in this proposed legislative program. Industry is particularly concerned because of the various problems that arise when key workers and other useful personnel become disabled. The problem has several aspects: the purely human side; the financial losses suffered by both workers and employers; the social consequences, which involve communities and governmental agencies as well.

Sun Bathing

ALTHOUGH MEASURED AND gradually increased exposure to the sun is healthful and desirable, many people—young and old—are guilty of rash conduct when exposing their bodies to the sun. Industrial nurses and personnel executives are very familiar with the absenteeism caused by Monday morning sunburn or the reporting for work unable to carry on as usual due to excessive exposure.

In the case of careless or thoughtless people, almost no measures can be of much help. They insist on overexposure and pay a severe price—seemingly with a mere shrug of the shoulders. It is unfortunate that their carelessness or thoughtlessness often has to be paid for by the employer or staff whose work processes are disrupted. For the others, perhaps the distribution of a pamphlet or mimeographed statement prepared by the medical and nursing divisions would be of some help. When vacation time comes, the industrial nurse can pass on her message on sunbathing, sunburn and sunstroke, covering the tendency of the skin to become dry, crack or peel as well as the more serious possible consequences such as cancerous conditions on lips and other surfaces in the case of older people. It is not necessary to frighten anyone, but the problem of overexposure is sufficiently serious to warrant definitive action.

MARTINDALE

PROTECTIVE MASKS

PLACE HEADBAND WELL UP AROUND HEAD TO KEEP FROM SLIPPING DOWN
PRESS NOSE TABS IN CLOSE AGAINST FACE TO HOLD PAD AGAINST THE NOSTRILS
PRESS EDGES OF FACE PLATE DOWN TO FIT FACE SNUGLY

Weigh less than ½ ounce. Afford excellent protection against non-toxic dusts, except free silica. Replaceable cotton pads are inexpensive and sanitary.

Martindale Protective Masks ..... $.30 ea.
No. 1 Refills (Standard Weight) ..... .02 ea.
No. 2 Refills (Heavyweight) ..... .02½ ea.

Masks packed individually. Refills packed 25 to envelope. No. 2 (heavyweight) Refills contain twice as much filtering cotton as No. 1.

We pay delivery on Cash Orders.

DISCOUNTS

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$100.00 and over	20%
Minimum, charge or C.O.D.	$2.00
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PLASTIC EYESHIELDS

One piece plastic molding—with high impact strength—meet government specs.

PRICES—NET, FOB CLEVELAND

2 to 5 ....$1.55 ea.
6 to 11..... ... 1.45 ea.
12 or more .... 1.35 ea.
Minimum order 2

Send for new 64-page Catalog 29 of Maintenance, Production and Safety Equipment.

MARTINDALE ELECTRIC CO.
1397 HIRD AVE. CLEVELAND 7, OHIO

(For details, use Key # U-16 on card on page 73)

Recent Safety Developments IN MATERIALS HANDLING

BULK HANDLER

A BASIC BULK handling tool, an addition to their Shoveloader line, for factories, foundries, mills and general maintenance and contract applications, is announced by the Baker-Lull Corp. The Model 20, with a 12 cu. ft. bucket, lifts 1500 lbs. of bulk materials to 7 ft. height. It has a 90 in. turning radius for close inside and outside work and is particularly suitable for working from boxcars, bins and stockpiles. It easily switches from loader bucket to adjustable lift forks, or special bucket and crane hook to handle many other important plant assignments.

The bucket suspends in low travelling position to give complete forward visibility. Loader boom arms are up front of the operator protecting him from injury during powerful lift action. Also, he has "full circle" visibility. Gasoline powered, the equipment has maximum travel speed of 14 mph. It has 4 forward speeds and one reverse speed. For inside work, special catalytic equipment is available that destroys dangerous exhaust gases. Spark arresting muffler and safety fuel tank are standard equipment.

For details, use Key # MH-1 on Inquiry Card on page 73.

PARTITIONED PALLETS

NOW AVAILABLE ARE Heco Partitioned Pallets with off-center plywood spacers that permit compact, safe and systematic storage of almost any merchandise, regardless

of size or shape. This new product, made by Hamerslag Equipment Co., provides for the warehousing of various sized crates and boxes on the same pallet. Its rugged, removable plywood dividers are positioned off-center on a standard pallet and allow a wide range of material to be stored on them at the same time, for example, batteries, bags, brushes, engines, vegetables, mattresses, meats, stoves, tires, wheelbarrows, books and acoustical tile.

The partitioned pallets bear weight well. The planned design makes them especially suitable for storage jobs where weight-compression losses are frequent, because there is no weight-compression loss on the new pallets, according to the manufacturer.

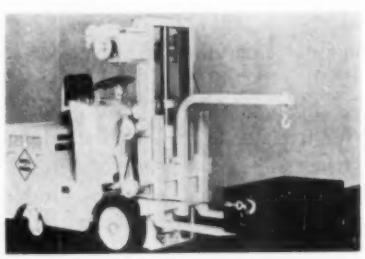
For details, use Key # MH-2 on Inquiry Card on page 73.

AUTOMATIC BRAKE

A NEW FORK TRUCK automatic braking feature providing both safety and economy has been developed by The Yale & Towne Manufacturing Company. It is so designed that when the operator leaves his truck for any reason, the driver's seat rises instantly, causing the parking brake to be applied. In addition, a time delay relay permits the engine to idle for three minutes before automatically shutting it off. This idling feature gives the operator time to make minor fork adjustments or to perform other activities and return to the seat without having to restart the engine. An important safety factor exists because the brake is applied automatically to an unattended vehicle.

Engine life is increased because long idling periods are eliminated. Prolonged idling of Diesel trucks is undesirable because of the relatively poor idling combustion of this type of engine. Flake carbon may form in the exhaust system and could result in a discharge of incandescent sparks when the engine is suddenly accelerated. Prolonged idling also increases maintenance costs on gasoline engines. The engine cut-off feature helps in reducing these maintenance costs and saves fuel.

For details, use Key # MH-3 on Inquiry Card on page 73.



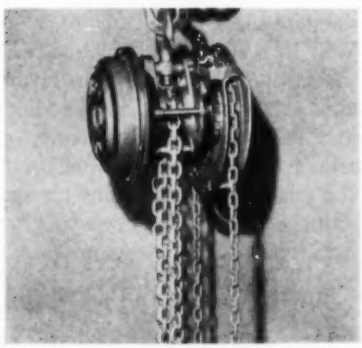
DIE HANDLING FORK TRUCK

A MULTI-PURPOSE fork truck designed for placing and removing dies from presses, and equipped with forks, a boom, and die-pulling equipment, has been introduced by the Elwell-Parker Electric Company. The truck handles dies weigh-

ing more than 1500 lbs., adapters weighing 650 lbs., trimmer dies weighing 400 lbs., and die inserts weighing 50 lbs.

The 4000-lb.-capacity truck has 42-inch-long forks and a 42-inch-long boom, the latter used when dies cannot be easily handled with the die-pulling device. The twin drum die-puller is operated by a separate electric motor and controlled by a master switch located at the left of the operator. The sheaves on the uprights serve as guides for the die-pulling cables and permit a straight pull at two positions of the forks. In this way, all power is used for level pull of the die rather than expending the force in alternate directions. The truck is 83 inches high, has a 66-inch lift, non telescoping. The boom and forks are readily removable. The truck can be used as a standard fork truck when not handling dies, thereby increasing its all-around versatility. The vehicle has dead-man control, hydraulic lift, worm and spur gear drive reduction, caster-type trail axle, four speeds forward and reverse and time acceleration.

For details, use Key # MH-4 on Inquiry Card on page 73.



SPARK-RESISTANT CHAIN HOIST

A NEW ONE-TON chain hoist recently announced by Ampco Metal, Inc. is non-magnetic and spark-resistant for use in locations where standard chain hoists constructed of ferrous materials have proved unsuitable.

The hoist is of the spur gear, ball bearing type, and is said to provide efficient operation combined with

What is this man doing?

He's helping reduce your accident rate!

Fifty percent of all accidents are preventable. That's an established fact. Here's another: the National Safety Council confirms that safety messages *that get read* do help reduce accidents. That's why it pays to . . .

Put your safety messages in your worker's hand — on an AJAX or AERO Cup — where he'll see them several times a day, when he's relaxed, receptive, ready to read. (And he'll appreciate the comfort, convenience and complete sanitation of these crisp, clean, easy-to-drink-from paper cups.)

AJAX® Cups — one-piece, wedge-shaped, easy to hold and drink from; in 4, 6, and 7 oz. sizes; packed imprinted with assorted stock safety messages or your own message to order.

AERO® Cups — for those who prefer a flat-bottom cup; in 3, 4, 5 and 6 oz. sizes. Also available imprinted with assorted stock safety messages or your own message to order.

GET THE FULL STORY

Write us today for this new folder which gives full details on imprinted AJAX and AERO Cups and equipment.

IT'S WORTH KNOWING

In a recent survey observers posted at three heavily-used public drinking fountains where both bubbler and paper cups were available noted that 79% of all users — men and women — *chose paper cups.*

AJAX and AERO Cups not only reduce the danger of transmitted infection, and thus help cut absenteeism — they improve worker morale because they provide the complete, sanitary, comfortable drinking water service most people prefer.

C2-8

United States Envelope Company

General Offices: • Springfield 2, Mass.

15 DIVISIONS FROM COAST TO COAST

(For details, use Key # U-17 on card on page 73)

an exceptional ability to withstand both wear and corrosion. With the exception of a few non-metallic parts and ball bearings of Monel, the entire unit is constructed with special copper-base alloys. All hoist chain is proof tested at 4,000 pounds, and the hoists are tested to 50% over their rated capacity.

The hoists are recommended for use in hazardous areas where sparks might cause an explosion and where corrosion might result from direct contact with liquid or fumes. The magnetic permeability of the Ampco materials of construction is low, being generally classed as "non-magnetic," and as a result, the hoists are specified by the Navy for Mine-sweeper service.

For details, use Key # MH-5 on Inquiry Card on page 73.

MAGNETICALLY OPERATED TRUCK

A NEW ELECTRIC fork truck line called SpaceMaster has been announced by Lewis-Shepard Products, Inc. Among the engineering and operational features incorporated in the new design is the new Master Controller. Speed, direction and braking are accomplished with

the one lever. The operator has a choice of four speeds forward or reverse and with the incorporation of magnetic controls he can throw the master control lever into full speed forward and get a smooth, automatically timed acceleration through each speed. It is not necessary to stop the lever at each speed stop. However, any one of the speeds can be selected if desired and the truck can be run continuously in any one of the speeds.

The operator can go from full (or any) speed forward to full (or any) speed reverse with one quick flick of the lever. Deceleration forward through neutral and into acceleration reverse are all controlled by magnetic timing. Another interesting feature is Dynamic Braking which means that the operator can decelerate and stop his truck without the use of his mechanical brake. In fact, trucks have worked a full eight hour day without using the mechanical brake. Dynamic Braking is accomplished via the master control lever in the palm of the driver's hand. This feature adds to the operator's control over the truck and eliminates the continual off-again-on-again foot brake operation.

For details, use Key # MH-6 on Inquiry Card on page 73.

NEW SAFETY HOOK

MANY ADVANTAGES are claimed for a new safety hook that has been developed by Coffing Hoist Company. It is said not only to offer greater safety to both men and equipment during lifting operations, but also to be so simple and convenient that hoist operators will make full use of its safety locking feature. Once the hook is engaged, a stamped steel latch swings down and is securely held in place by a lock that is under spring tension. There can be no movement of the latch sideways because it fits snugly over the point of the hook. Slight pressure on the release unlocks the latch, and spring tension on the release holds the latch open.

The latch is designed to allow full and unobstructed use of the hook's large throat opening. It is also designed so that it will shed wires and other objects rather than snagging them. The hook itself is made of drop-forged, heat-treated alloy steel, and is claimed to have higher tensile strength than any other hook of its size on the market. Cadmium plating prevents any rusting or corrosion that might otherwise hinder its use.

For details, use Key # MH-7 on Inquiry Card on page 73.

APPROVED LPG TRUCKS

APPROVAL AND LISTING for a fork-lift truck powered by liquefied petroleum gas (LPG) has been granted by Underwriters' Laboratories to Clark Equipment Company. The LPG-Carloader is a standard model fork truck in 3000–5000 lb. capacities, equipped with conventional, Dynatork or Hydratork transmission, factory-modified for LPG operation. Installation of a compact, field-tested "fuel unit" and relatively minor engine changes adapt the gasoline-powered fork truck for LPG.

What is LPG?

LPG, in normal commercial usage a mixture of butane and propane under pressure, is a desirable fuel because it burns clean without giving off obnoxious fumes and leaves no unburned carbon, lead compound or varnish deposits. Because it is a dry gas, there is no liquid to dilute the cylinder lubricant or crankcase oil. The result is less wear on cylinder walls and bearings, and longer life for the lubricating oil. The fuel unit consists of a heavy-

duty fuel tank, vaporizer-regulator and a simple, rugged air-gas carburetor. The system draws fuel from the tank in liquid form and is vaporized before it reaches the manifold. This means that even in extremely cold weather, there is little difficulty in starting, it is claimed. With a vapor system—a system where fuel is drawn from the top of the fuel tank as a vapor—starting difficulties in cold weather are common because of reduced vaporization in the tank.

Since the fuel is under its own pressure at all times in the tank, the need for a fuel pump is eliminated. A solenoid valve automatically opens or closes the fuel line by the ignition switch, and serves as a positive lock-off when the engine is stopped. As another safety precaution, a vacuum switch has been placed between the ignition and the manifold which prevents fuel from being drawn into the engine until the engine is turned over. The engine is modified to operate at a high compression ratio (8 to 1) to take better advantage of LPG's octane rating and to provide maximum efficiency, fuel economy and engine power. Also, a cold intake manifold is used, since the fuel is already a gas when it enters the manifold and does not require a hot spot as does gasoline.

To provide longer engine life, stellite-faced valves and seats and positive valve rotators are used in the LPG-Carloader engine, the manufacturer reports. These are desirable, it is claimed, because LPG has a tendency to burn conventional valves due to its higher flame temperature. To refuel the LPG-Carloader, the fuel tank is removed in a matter of minutes and simply hooked to the LPG storage unit and fuel pumped in; a hand pump can also be used effectively. Spare tanks are available if it is desired to keep a stand-by full tank. The fuel tank is rated at 1600 pounds pressure, and is equipped with a safety-relief valve which by-passes pressure in excess of 275 pounds.

For details, use Key # MH-8 on Inquiry Card on page 73.

Whether you have a new concrete floor or are refinishing an old one, the Multi-Clean Method is fast and economical. It fortifies concrete against abrasion and the devastating effects of excessive water, grease, oils, alkali, soaps and other chemicals. It prevents concrete dusting, pitting and chipping . . . gives you a hardened, completely sealed floor in a wide range of permanent non-fading colors and natural. You'll get better service and greater safety with added beauty and longer life from your concrete flooring when you use The Multi-Clean Method.

MULTI-CLEAN cuts hours off maintenance time!

The Multi-Clean Method saves many hours of floor maintenance time. Sweeping is easier, more effective and wet moppings become less frequent. Periodic steel wool buffing loosens stubborn dirt and restores the finish.

IT'S ALL EXPLAINED

Every floor care problem is answered in this 44-page handbook, packed with valuable information about floors and how to maintain them for lasting results and at lower costs.

WRITE TODAY FOR YOUR COPY!

MULTI-CLEAN®
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2277 Ford Parkway — St. Paul 1, Minnesota

MAIL COUPON TODAY!

Multi-Clean Products, Inc.
2277 Ford Parkway, Dept. SP-8, St. Paul 1, Minn.

Gentlemen: I would like this handbook and information on: ☐ Floor Machine; ☐ Floor Scrubber; ☐ Vacuum Cleaner. I'm interested in The Multi-Clean Method for: ☐ Concrete Floors; ..... Floors.

Name_____

Address_____

City_____ Zone____ State_____

(For details, use key # U-18 on card on page 73)

Learning ..... the hard way

HEADS UP!

THERE HAVE BEEN, RECENTLY, A number of accidents in which sprinkler systems have been damaged and the escaping water has ruined many tons of goods. For example, a loaded stacker was driven into a low-ceilinged area and struck an unprotected sprinkler feed pipe. The deluge wet 5000 cartons of groceries. A lift-truck operator, tiering cases, raised a load too high and broke a sprinkler head. Escaping water ruined 1000 rolls of paper.

This is too hard a way to learn sprinkler protection. Steel guards and warning signs should be placed around exposed sprinkler piping, heights of warehouse piles should be limited, and careful operators of trucks should be selected. They should not be allowed to stack their truck so high as to interfere with their vision. All these steps of reasonable care can save money and prevent accidents before they occur.

TOO CLOSE A LOOK!

AN EMPLOYEE IN A REFINERY LOST an eye when a pressure gauge he was looking at, exploded. Pieces of glass struck him in the eye, injuring it so severely that it had to be removed. The gauge, connected to the discharge side of a reciprocating pump, was practically new. The tube leading to the gauge ruptured when the pump was started with the discharge off, causing the face and lens to blow out.

To prevent a recurrence, pump operators should make sure the pump discharge line is open and free when the pump is started. Also, a hole or holes should be drilled in pressure gauge cases to release pressure should the connecting tube rupture. The holes can be covered with tape to keep out harmful damp and dust.

WAIT TILL IT'S OUT!

WOODEN CRATING AND WRAPPING paper around a newly delivered electric furnace were ignited by globules of molten aluminum spattered from a nearby furnace. Two employees used carbon dioxide units to extinguish the fire, at least so they thought. They left to report the incident; but when they returned, the fire was blazing again. Before it was finally extinguished it caused additional damage to the furnace and its controls.

While the men did make a mistake in using carbon dioxide units on ordinary combustibles such as wood and paper, they made a much more serious error in judgment by leaving the fire just because it was out. They certainly ought to have used water on the fire (if available) and remained to be positive that it did not rekindle.

PILOT LIGHTS CAN BE SAFE

A MAN WAS ATTEMPTING TO RElight a pilot light. He had no way way of knowing that gas had accumulated in the fire box. The gas exploded and the man was severely burned on his hands, arms and about the face. He could not be blamed for not being able to see into the fire box, but he should have known that gas can accumulate from a pilot light that has gone out, from gas that is not turned off, etc. Many cities have ordinances to meet this hazard, requiring all new gas-fired installations to have automatic shut-off valves. These valves cut off the gas whenever the pilot light goes out. Old installations can be fitted with these safety shut-off devices at a nominal cost. This is an essential safety device whenever a pilot light is used.

UNLESS YOU HAVE X-RAY EYES . . .

UNLESS YOU HAVE X-RAY EYES don't step onto or into something without knowing what's underneath it and how it is supported. The man who steps onto a scaffolding because he thinks it is hooked firmly to the roof may be 10 stories closer to death when he finds out it isn't. In this particular case, a cleanup man in a cotton gin stepped into a screw conveyor trough that concealed the screw and the fact that it was running. His leg was caught and mangled by the screw and he died from shock.

Pallet Standardization

AT THE INVITATION OF THE AMERican Standards Association, the Society of Industrial Packaging and Materials Handling Engineers has accepted co-sponsorship of a project on "Pallet Standardization," with the American Society of Mechanical Engineers.

Scope of the project is "Standardization of Nomenclature, Materials, Sizes, and components of Pallets including sampling, inspection and test procedures."

Accident Rates Down in First Quarter

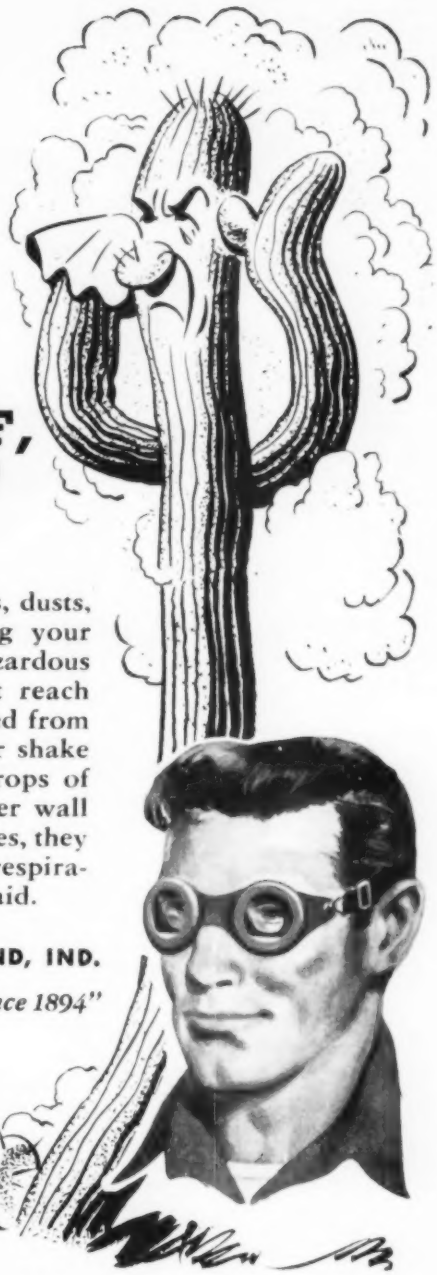
THE INJURY-FREQUENCY RATE OF factory workers reached a new low of 11.8 disabling injuries per million man-hours worked in the first quarter of 1954, according to preliminary reports released by the U. S. Department of Labor. This rate was 2 percent under the previous low of 12.1 recorded in the fourth quarter of 1953 and 14 percent below the average for the first quarter of 1953. Although 1953 was a record year for safety, this year promises to be even better.

According to figures received by the Labor Department's Bureau of Labor Statistics, the monthly rates moved up slightly from the unusually low level recorded in December 1953, but this movement was largely seasonal. The December to January increase was slightly less than usual; that from January to February was about average; and March showed a very slight increase, compared with decreases recorded in most previous years.

A comparison of rates for individual industries indicates about as many decreases as increases between the fourth quarter of 1953 and the first quarter of 1954. Over the year from the first quarter of 1953 to the first quarter of 1954, however, decreases of one full frequency-rate point or more were recorded by 78 of the 127 industries for which such comparisons were available; significant increases were reported by only 13; and little change was shown by the remaining 36 industries.

The sawmill industry recorded a substantial drop in injuries, with a rate of 35.6 for the first quarter of 1954, compared with 46.6 for the fourth quarter and 55.4 for the first quarter of 1953. A total of 14 industries had rates of less than 5 injuries per million man-hours, ranking generally about in the same order as in the past. The synthetic fibers industry reported a rate of 1.2; miscellaneous communication equipment, 2.0; rubber footwear, 2.6; electric lamps (bulbs), 2.6; explosives, 2.6; synthetic rubber, 2.7; aircraft, 2.9; radio tubes, 3.2; electrical equipment for vehicles, 3.3; plastics, except synthetic rubber, 3.7; motor vehicles, bodies, and trailers, 4.3; miscellaneous industrial organic chemicals, 4.5; distilled liquors, 4.5.

Eyes DUSTY, DRY?



YOU NEED . . .

FOG-PROOF, GAS-TIGHT GOGGLES

. . . for paint spray, gases, dusts, fumes, smoke. They hug your face so securely that hazardous outside elements cannot reach your eyes. Fog is removed from lenses by an easy nod or shake of the head. The few drops of water placed on the inner wall of the lens do the trick. Yes, they can be worn with any respirator. Sample, $2.00 postpaid.

H. S. COVER, SOUTH BEND, IND.

"Respirators for Industry since 1894"

(For details, use Key # U-19 on card on page 73)

KEEPS FIRE DAMAGE COSTS DOWN!

Among the many types of up-to-date, fully approved fire protection equipment manufactured by C-O-TWO, the following comprise the principal items on the market today:

- carbon dioxide type hand and wheeled portable fire extinguishers
- dry chemical type hand and wheeled portable fire extinguishers
- carbon dioxide type hose rack and hose reel fire extinguishing units
- built-in high pressure carbon dioxide type fire extinguishing systems
- built-in low pressure carbon dioxide type fire extinguishing systems
- built-in smoke fire detecting systems
- built-in heat fire detecting systems
- high pressure carbon dioxide cylinder recharging equipment

Today's high costs and delayed replacements make it more and more a "must" for you to obtain the lowest insurance rate and the maximum in fire protection at a justified all over expenditure.

There is a personal sense of responsibility inherent with C-O-TWO Fire Protection Engineers that assures you of fully adequate firesafety... a definite plus in your behalf. Whether it's fire detecting or fire extinguishing... portables or built-in systems... C-O-TWO means top quality backed by experienced engineering that results in operating superiority for you at all times.

With C-O-TWO Fire Protection Equipment, simplicity, practicability, longevity and minimum maintenance are built-in features that guarantee fast, positive action the instant fire strikes. Furthermore, extensive manufacturing and field installation skills, together with approvals such as the Underwriters' Laboratories, Inc., Factory Mutual Laboratories, Armed Forces and Government Bureaus assure you of the finest in modern fire protection equipment.

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Don't take chances with your investment. Secure the benefits of highly efficient fire protection engineering today... our extensive experience over the years is at your disposal without obligation. Get the facts now!

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AFFILIATED WITH PYRENE MANUFACTURING COMPANY

May Fire Losses Down

ESTIMATED FIRE LOSSES IN THE United States during May amounted to $62,282,000 according to the National Board of Fire Underwriters.

This $62,282,000 loss represents a decrease of 3.0 per cent over losses of $64,239,000 reported for May, 1953, and a decrease of 20.1 per cent from losses of $77,933,000 for April, 1954.

Losses for the first five months of 1954 now total $390,457,000 an increase of 7.1 per cent over the first five months of 1953, when they amounted to $364,437,000. These estimated insured losses include an allowance for uninsured and unreported losses.

Smoke Dangers in Public Buildings

THE POSSIBILITY OF DISTRIBUTING smoke in a public building through forced draft heating ducts poses a real problem for responsible personnel. Not only can smoke ruin interiors, but it can cause panic among people in the structure. In an auditorium, for example, the panic danger outweighs smoke damage. In structures housing valuable materials or equipment, the interior damage is of primary consideration.

A review of smoke damage insurance losses indicates that claims totaling thousands of dollars are paid annually as a result of this type of damage. At the same time, almost daily in newspapers one can find stories describing a hurried vacating of a building due to smoke accumulations . . . with too many of them reporting injury to occupants or loss of life. No matter how little the actual damage, lingering smoke odor remains a problem.

To guard against such occurrences many public and private buildings have installed smoke detection equipment which monitors a building's heating system's plenum chambers from which hot air ducts originate. Frequently the heating, air cleansing, and humidifying equipment upstream of the chambers are surveyed to determine if any part of the equipment, if afire, could generate a large volume of smoke. Most frequently discovered are recirculating oil cleansed air filters which could prove troublesome. This equipment combines 2 of the basic ingredients necessary for fire—a flammable liquid and oxygen. All that is needed is an ignition source whether it be a static spark or an electric short.

A carbon dioxide extinguishing system for the filter and a smoke detection apparatus for plenum chambers have proved effective. Here's how a typical system works. On each side of the air filter are mounted overhead rate-of-temperature-rise fire detectors. If fire breaks out, the increasing temperature causes these elements to trip cylinders of carbon dioxide stored nearby. Under its own pressure, the fire smothering agent floods from the cylinders and passes through piping to both sides of the filter where it is discharged from nozzles in sufficient volume to reduce oxygen to a point insufficient to support combustion. The fire is strangled.

Often, built into the system's piping are pressure operated switches which are triggered by the passage of the gas. When actuated, they stop the powerful hot air circulating blower and sound electrical alarms. Pull boxes enabling the system to be manually actuated are also available. The smoke detection equipment comprises detection boxes, one assigned to each plenum chamber. Each detector continuously tests air samples from its chamber by means of photoelectric cells. If a sample contains smoke, the smoke reflects light onto the cells increasing their output. This increase trips alarms and also stops the blower. These danger signals normally sound in the same locations as do the oil filter alarms.

The Twin Terrors . . . Fire & Panic

WHEN FIRE SWEPT THROUGH A dance hall in 1940 in the deep South with a loss of 207 lives, the general feeling of the public was that such a tragedy could not occur in the larger cities, where places of this kind were subject to local regulations and were under the inspection service of building departments and fire prevention bureaus. The stampede and death by fire, totaling nearly 500 persons, in the Cocoanut Grove night club in Boston in 1942, was a rude awakening and this was followed in two weeks by a holocaust in Newfoundland which caused the death of nearly 100 people.

The questions which naturally come to mind, points out a recent bulletin of the National Board of

Fire Underwriters, are whether such a catastrophe can occur in one's own community, and what can be done to prevent such occurrences.

Danger of Crowds

Where people congregate in closely crowded groups of 100 or more there is a possible danger of panic. This danger is increased by the lack of knowledge of the location of exits, the absence of suitable exit signs and by the quickness with which fire may spread through combustible decorations. Such places exist in nearly every community. Not all of them are of a type which would be classed with dance halls, cabarets or night clubs. Restaurants, ballrooms in hotels, auditoriums in clubs, schools, industrial plants or society halls, and social rooms in churches may at times become overcrowded, and be deficient in exits or have an excess of flammable decorations.

The correction of conditions introducing possibilities of death or injury is not always easy. The first step is to have someone in authority inspect these places, and next to have the unsatisfactory conditions corrected.

There can be no question but that adequate exits must be provided, but exits alone are not the complete answer. Even with an excess of doorways, and of stairs and other exit provisions, there is the possibility of panic, together with danger from ignition of clothing and the inhalation of deadly gases. The general tendency is for people to try to get out by the same doorway they used in entering. The adequate marking of other exits and direction as to how to get to them should be insisted upon.

Often the conditions most needing correction for life safety are the ones most difficult to correct. The fact is many of the changes necessary will involve large expenditures of money and therefore enforcement is not easy. Structural features such as open stairways (which have provided means for quick upward spread of fire and suffocating fire gases), lack of firestopping in walls or ceilings, highly flammable surface finish materials on walls and ceilings, large area combustible construction, and inadequate protection against fire in other occupancies, have all been factors which have aided in the rapid spread of fire with resulting actual or threatened loss of life.

An automatic sprinkler system can be used to good advantage where structural features are below standard. It will go far toward making life safety a fact in any place of assembly. Even a partial system covering the more hazardous areas would improve conditions.

Exit doors have often been found blocked or locked so as to be unusable and in some cases loss of life has been attributable to this condition. Fire prevention inspections should include a careful check on the usability of all required exit ways, especially as they exist during periods of occupancy.

One item having a marked influence on the panic hazard is that of overcrowding. Where seats are not fixed, special attention must be given to maintaining proper aisles free of all obstructions.

Fire extinguishers should be provided in kitchens, storerooms and other places where fire hazards exist. They must be given regular inspections and proper maintenance or they may not be usable when the fire emergency arises. Managements should give thought to what should be done in time of emergency, and adopt a definite plan which will provide for life safety by evacuation or other means that may best fit the circumstances, and assign appropriate duties to each employee. Employees should be instructed in use of fire extinguishing devices, in the necessity for keeping aisles and exits in usable condition, and in the method of collapsing any revolving doors that may be present. Revolving doors should be tested by collapsing at least once a month.

Decorative materials such as curtains, draperies, streamers and loosely attached wall and ceiling coverings should be flameproof. Some materials are of themselves sufficiently flameproof; others can be made flameproof by treatment with a chemical solution applied by dipping or spraying. Many treatments need to be renewed at intervals of six months or a year. Fire prevention inspections should include a semi-annual check on the flammability of decorative materials.

Fire Safe Construction of Piers and Wharves

NEW ADVISORY STANDARDS FOR THE Construction and Protection of Piers and Wharves have been published by the National Fire Protection Association. These standards are purely advisory but have widespread influence as a guide to good practice in dealing with the fire problems of this class of property which, for many years, has suffered an average loss per fire greater than that in any other class.

Prepared by a committee including representatives from port authorities, railroads and other users of water terminal facilities, fire chiefs, fire marshals, underwriters, the U. S. Navy, and others, these new standards focus particular attention upon the danger of fire underneath the main deck of piers and wharves with combustible substructures. These spaces, a forest of wooden piling and cross bracing, are very difficult to reach by fire departments. Where they not subdivided by fire-resistive bulkheads and lack any automatic protection, they have been the cause for a long series of disastrous pier fires.

The new standards recommend completely noncombustible construction and specify that where wooden substructures are used the area should be suitably subdivided to prevent the spread of fire and that where the areas are greater than a specified minimum automatic sprinkler protection should be provided. Superstructures, methods of protection for combustible cargoes, water supplies for fire fighting, and other details, are likewise covered in these new standards. Copies are available at 35¢ each from National Fire Protection Association, 60 Batterymarch St., Boston 10, Mass.

Thermostatic Shut-off Stops Drying-Tower Fires

OVERHEATING AND FIRE are now only a remote possibility in the continuous spray drying towers in Lever Brothers plants because of a well-planned, thermostatically-actuated safety system. The system automatically shuts down the drying operation and actuates a variety of devices to retard combustion in case fire or overheat conditions develop inside the towers.

The drying towers evaporate water from a product-and-water slurry that enters in a continuous stream at the top of the tower. As the slurry moves down through the tower, it contacts a stream of heated air which extracts the water and exhausts it to the atmosphere. The dried soap collects in granular form at the base of the tower.

Because the hot air is fed continuously into the tower, certain types of malfunctions, such as a stoppage of slurry flow, could result in a serious overheating inside the tower, perhaps to the ignition point of the product. Therefore, an elaborate system of safeguards was built into the towers to sense abnormal heating conditions and take remedial action before dangerous temperatures are reached.

Thermostatic Triggers

The safety system, for the most part, is triggered by thermostatic controls located at various potential danger points. Two such controls are located at the upper part of the tower where the greatest heat build-up usually occurs. One of these controls is a rate-of-rise detector which responds when the tower temperature rises at an abnormal rate. The other is a fixed temperature detector. In addition, each of the dust collector bins that extract finely-divided dust from the exhaust airstream is protected with this type of unit. To protect both the process and equipment against abnormal heating and possible fire, the detectors trigger an automatic safety system, which company engineers call the "master release" (see Fig. 2).

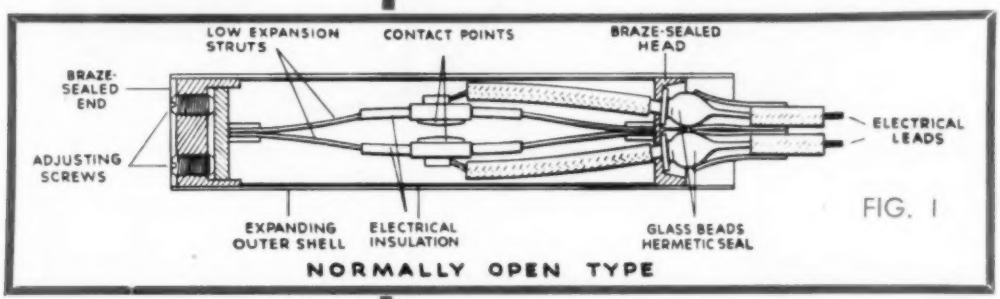

FIG. 1

Cut-away view of an hermetically sealed detector unit shows this essential part of the detection system.

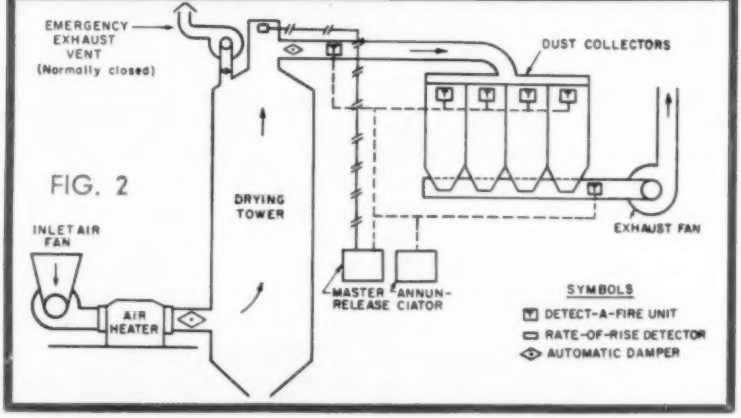

FIG. 2

Schematic diagram of the automatic protection and alarm system in the dry towers and dust collectors in soap manufacturer's plant explains how any detector which senses a fire or overheat condition, prompts the master release system to activate a series of emergency controls which can then remedy the situation.

The purpose of the master release is to shut off the heater and cut off the forced draft system to create poor combustion conditions inside the tower. When the master release operates, the following things take place:

(1) The air heater shuts off, eliminating further heat input.

(2) The air inlet and exhaust fans shut off and their corresponding dampers are closed, eliminating the normal air stream in the tower.

(3) A special damper in the exhaust stack opens, venting collected heat to atmosphere.

(Continued on page 62)

Careful fire investigations are the best way to find out...

WHY AND HOW FIRES START!

By PROF. JOHN J. AHERN
Dir., Dept. of Fire Protection and Safety Eng., Illinois Institute of Technology, Chicago

FIRE LOSSES IN THE UNITED STATES will top a billion dollars this year. This is a sad commentary on a nation that is proud of its progress in science and technology. We have probed many of nature's secrets, conquered the stratosphere, explored the ocean depths, split the atom, smashed the sonic barrier, but we haven't learned to control fire.

This poses a grim picture as we look into the future and wonder how we will fare with our more recent discoveries. We are attempting to control those forces which we worked feverishly to create by using only half-way measures. The same science and technology that gave birth to our modern high speed world can produce the control measures. In order to use science effectively in developing control measures we must know exactly where our failures are occurring.

Fire has no conscience. It does not and cannot distinguish between keeping us warm in our homes or burning us alive in our beds. The direction of its tremendous powers is a matter of human control.

In order to exercise this control we must have a better understanding of how and why fires start. I want to particularly emphasize the "why" of this problem. It is not enough that a fire started from a gas fired automatic heater, but we must know why the controls failed, if we are to make progress.

(Continued on page 56)

Ansul

is the only dry chemical fire extinguisher backed by a five year warranty!

Here is proof of Ansul's superiority . . . *a five year equipment warranty*, the only one of its kind in the fire control industry.

For the buyer of fire equipment this important warranty means many *extra* years of trouble-free protection plus freedom from costly and frequent maintenance checks and repairs.

The special design and construction features that make this warranty possible provide not only dependable protection but also *fast*, *effective* fire control. Ansul's *weather-tight* construction keeps out moisture and resists corrosion. *Patented nozzles* deliver the right kind of stream for your fire protection problem. The *sealed pressure cartridge* puts Ansul's "Plus Fifty" dry chemical to work immediately—no delay or lag. And finally *rugged construction* makes it possible for Ansul equipment to give peak performance under the toughest operating conditions.

HERE IS THE BIG TRAINING AND SERVICE PLUS OFFERED ONLY BY ANSUL!
Available without cost to all Ansul users.

Training for your personnel at your plant by Ansul specialists.

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Visual aids on fire control for your safety meetings and other training.

In-plant survey to scientifically determine your fire protection needs.

Call the Ansul Man!

ANSUL

Get in touch with your local Ansul man through the "yellow pages" or write ANSUL CHEMICAL COMPANY, Fire Equipment Div., Dept. F-53, Marinette, Wisconsin.

(For details, use Key # U-21 on card on page 73)

To start, let's define a fire cause. I have searched and been unable to find a clear cut definition which brings out the points I consider important. My own definition goes something like this, "***A fire cause is the action or lack of action which brings together combustible material with a source of ignition.***" This definition brings out the fact that a fire cause must have two elements, first, something to burn, and second, a source of ignition.

If we look at the available statistics we find fire causes listed as, "flammable liquids, welding, smoking and matches, etc." Immediately it is apparent that this type of tabulation does not fit our definition nor is it of much help in attempting to improve our fire record.

For example, let's look at the listing of welding and we see that it is charged with a sizable number of fires each year. Does this mean that all welding operations are hazardous? Certainly not!—What is missing is the other half of the cause, welding where? Welding in a rag warehouse is entirely different from welding in a metalworking shop.

The same type of reasoning applies to flammable liquids. Actually flammable liquids never started a fire, but it is the things which we do or fail to do to flammable liquids which produce the disastrous fires charged against these materials.

It can be seen that no matter how hazardous, or no matter how susceptible to ignition a material may be, it can be safely handled by an engineering approach which will eliminate all sources of ignition.

All this is meant to act as an incentive to spur on better and more complete fire investigations to obtain reliable information on the actual fire cause. There can be no doubt that this information is needed, since it is only by studying our failures that we can avoid future similar incidents. How can we go about getting this vital information?

We know that buildings do not ignite by themselves. Theoretically we could build a structure of gunpowder and, if it were placed out in the wilderness and left alone, it would stand indefinitely.

It is only when we bring human beings into the structure that we begin to have trouble. Man wants heat for warmth and cooking and introduces the first possible sources of ignition. Then he decides that he needs light and another ignition source is added. As man's fertile brain continues to function he brings in additional sources of ignition—moving machinery generating heat by friction—chemical processes generating heat by chemical action culminating in nuclear fission.

Throughout this whole development we must always remember that man is human and subject to error. There will always be signs that lead to that error and enable us to learn and improve civilization.

Unfortunately the great destructive power of fire frequently destroys most of the evidence. Fortunately, however, there are certain basic things which we all know about fire which are of great assistance. By applying these basic facts to a fire we strive to establish the point of origin. Essentially this means applying fire protection engineering in reverse as we trace the flame path.

No 2 Fires Alike

We must first recognize that no two fires in buildings act exactly alike. In England shortly after World War II, fires were purposely started with great care in identical buildings with the purpose of producing identical fires. The results, however, varied widely; in some cases the fires would roar through the building and under identical circumstances the fire would die out.

Fire tends to sweep upward until it meets an obstacle in its progress. This obstruction can be combustible itself, but it will temporarily arrest the spread of flame. The fire then mushrooms out or bends over and begins to seek an avenue of escape below the obstruction. For example, fire and smoke will race up an elevator shaft, but if it is closed at the top, the fire will begin poking its way into the lower floor doorways.

Horizontal spread, however, is relatively slower, unless a draft condition is present. In a large room without a draft present, the progress across the room in the early stages of the fire is relatively slow. "Flashover," to be discussed later, will change this factor drastically. Contrasting that large room with a long corridor with open windows at the end, we have an entirely different picture. Here the hot gases and smoke will race down the corridor carrying fiery death with them at extremely fast speeds. Our hotel and hospital disasters have been tragic examples of both the rapid vertical and horizontal spread of fire under draft conditions.

In tracing a fire back to its origin the question is sometimes how did it race across a particular area when there was no continuous patch of combustible material? Obviously, all combustible materials can spread fire over their surfaces. However, there are vast differences in the speeds with which fire will move across them. The almost instantaneous flash which occurs as the vapors on the surface of flammable liquids ignite is familiar. Fuzzy combustible fibrous materials will also spread flame quickly across their surfaces.

From these two extremes we can scale down through many types of materials to those which are basically incombustible. The differences are great and appearances can be misleading. Combustible fibrous materials can be painted to slow down the rate of flame spread across their surfaces, for instance. Fortunately, many of these materials have been examined and tested in the "Tunnel Test" of Underwriters Laboratories, Inc., and the resulting data is readily accessible.

There is another factor which explains some of the rather mysterious quick spreading fires that witnesses so often testify leaped across a room or corridor. This is the so-called "flashover" characteristic which has been observed in numerous tests. It is closely related to room temperatures. Observations of test fires show that between 400

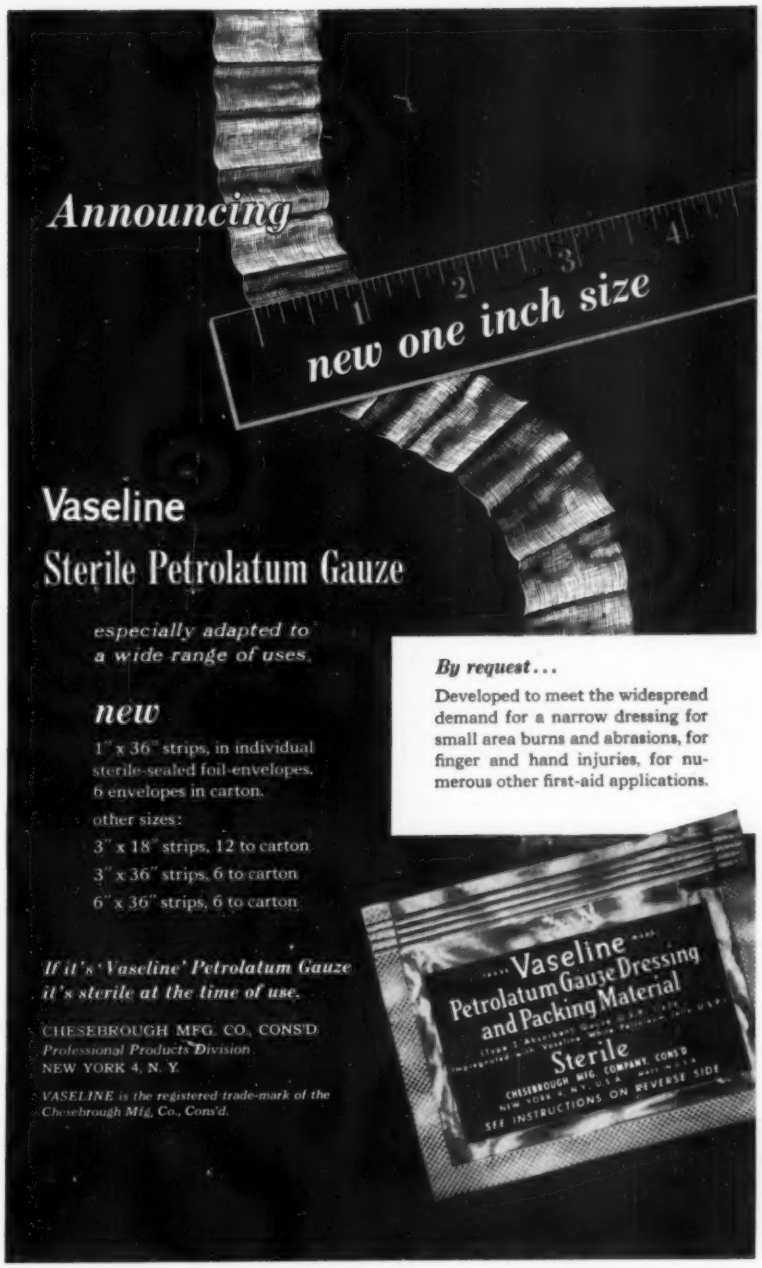
degrees F. and 500 degrees F. furniture ignites without flame contact, but when the room temperature reaches the vicinity of 600 degrees F. to 700 degrees F. a "flashover" frequently occurs, and the entire room appears to burst into flame at once.

Flash Fire—What's That?

At this point I would like to interject one of my pet gripes. That is the term "flash fire." Newspaper reporters all use the term as if they knew what it meant! The public has seen the term so often that they think they know what it means. Unfortunately, I don't know what it means, and I wish someone would let me in on the secret. I have talked to many fire investigators and have yet to find one who can define the term. Any one of the fire situations I have described could be termed a flash-fire. So might a slow gas-air explosion, or flame racing through the vapors of flammable liquids. Although each one of these situations is different (and we must recognize those differences to trace down the source), we are allowing them all to be lumped under the term, "flash-fire." Don't ever accept this description from a witness! Instead, continue to question him concerning color of flame, position of flame, smoke present, odors and noises, if any.

Other clues helpful in tracing a fire to its point of origin are the signs which point to its direction of travel. In a Chicago disaster, fire and explosion ripped across the third floor of a factory. As it went it burned only one side of each pillar and beam. Careful examination of structural members, as in this case, frequently will show more and deeper charring consistently on the same side, which gives a clear indication of the direction the fire was traveling. Moving under draft conditions, it does not tend to reach back and burn the reverse side of each structural member but tends to leap on to the next exposed surface.

With the preceding information, we are frequently able to trace the fire back to its point of origin.


Announcing
new one inch size
Vaseline
Sterile Petrolatum Gauze
especially adapted to a wide range of uses.
new
1" x 36" strips, in individual sterile-sealed foil-envelopes. 6 envelopes in carton.
other sizes:
3" x 18" strips, 12 to carton
3" x 36" strips, 6 to carton
6" x 36" strips, 6 to carton
If it's 'Vaseline' Petrolatum Gauze it's sterile at the time of use.
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CHESEBROUGH MFG. COMPANY CONS'D
SEE INSTRUCTIONS ON REVERSE SIDE
(For details, use Key # U-22 on card on page 73)

Then, from points of evidence previously discussed, we can put together the circumstances which brought together combustible materials and a source of ignition. If it traces back to a furnace room, for example, we can reach conclusions as to whether or not there was combustible material close enough to the heat source. Combining this with our knowledge of ignition temperatures of common materials, it is possible to determine how the fire started.

This is a critical point in our search for the fire cause, because many, if not most investigations stop here and die. The verdict: "fire from faulty heating equipment," or "fire due to electrical defect in basement." The important point, if we are to learn anything for the future, is "why?" Why did the furnace overheat? What happened to the controls? Why? What caused the electrical system to overheat? Why didn't the fuse or over-

(Continued on page 63)

inside the trade

A recently completed expansion program, including an additional 1,000 square feet for the engineering department, has resulted in a 60 per cent increase in the plant manufacturing capacity of Schmieg Industries, Inc., Detroit, Michigan, engineers and manufacturers of dust and fume control equipment, spray booths, washers, and sheet metal equipment.

Daniel P. Lacock has been appointed Southeastern Regional Sales Manager for Federal Electric Products Company and its wholly-owned subsidiary, Pacific Electric Manufacturing Corporation. Southeastern regional headquarters for the company are located in Atlanta, Georgia.

Mr. Lacock will supervise sales of the combined Federal-Pacific line of high and low voltage electrical switchgear, controls, and distribution equipment in North Carolina, South Carolina, Georgia, Florida, Alabama; and parts of Tennessee, Louisiana, and Mississippi.

The John H. Breck Inc. Microbiology Laboratory, a gift of John H. Breck Inc., manufacturers of soaps and protective creams, was presented to the Massachusetts College of Pharmacy on behalf of his firm by Edward J. Breck, President.

According to officials of the College, the new Breck Microbiology Laboratory is one of the most up-to-date and well equipped laboratories for the study of bacteriology in the country. It will be used in the undergraduate school by the senior class in its course in bacteriology. This subject is a study of the principles of microbiology and immunology. It includes intensive instruction in bacteriological technique as applied to the following: the preparation and sterilization of culture media and of bacteriological equipment; methods of culturing bacteria; the recognition of the morphological and bacteriological characteristics of various microorganisms; special staining procedures; bacteriological methods used in the examination of milk and water; and the evaluation of antiseptics and antibiotics.

Huntington Laboratories, Inc., has been named a distributor of the American Dryer, a new, automatic hand dryer and deodorizer for wall mounting.

C. Walker Jones Company, Philadelphia, Pa., manufacturer of loop pile fabric work gloves, has changed its name to Jomac, Inc. There is no change in the officers or personnel of the corporation.

H. Howard Colehower president, explained that the company name was changed because the trade name, "Jomac," which identifies its work gloves and knitted specialties, has become widely recognized.

Ampco Metal, Inc. has announced the appointment of the Davis Emergency Equipment Company of New England—130 West Emerson Street—Melrose 76, Massachusetts as a Class A Safety Tool distributor.

SAVE 85% Of Needless Washroom Expense

NEW, FASTER DRYING Sani-Dri Provides CLEAN, SANITARY SERVICE

SAVES TOWEL COSTS . . . SAVES MAINTENANCE

Save up to 85% of washroom costs with new, faster drying Sani-Dri hand and hair dryers. No buying and storing of paper towels . . . no monthly service fee for cloth towels. Sani-Dri reduces maintenance overhead and provides 24-hour, automatic drying with no clutter . . . no towel waste . . . no fire hazard. All models carry Underwriters seal and 2 year guarantee.

Only Sani-Dri—The Original Electric Dryer Offers So Many Exclusive Features!

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WRITE TODAY FOR NEW ILLUSTRATED FOLDER SHOWING COMPLETE LINE

Manufactured and Guaranteed By
THE CHICAGO HARDWARE FOUNDRY CO.
"Dependable Since 1897"
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(For details, use Key # U-24 on card on page 73)

SLIP-ON GUARD

ETS-A-LITE GUARD and GUIDE
Quickly and Easily Installed by Anyone — No Tools Needed!

- Simply slip GETS-A-LITE GUARD AND GUIDE over the fixture, as illustrated.
- Made of indestructible spring steel wire. Nothing to break, get out of order or replace. Will last indefinitely.
- Once installed, GETS-A-LITE GUARD AND GUIDE is NEVER removed.
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- GETS-A-LITE GUARD AND GUIDE actually steers lamp into socket, enabling maintenance man to change lamp in 10 seconds!
- Available for 40 watt and 100 watt fluorescent lamps.

Contact Your Electrical Wholesaler, OR

GETS-A-LITE Company—Dept. SM84
3865 N. Milwaukee Ave., Chicago 41, Illinois

(For details, use Key # U-23 on card on page 73)

TRANSPORTATION SAFETY

"BI-FOCALS" FEATURE NIGHT-DRIVING GLASSES

SAFETY AUTHORITIES HAVE always opposed the use of tinted goggles for night driving, because in cutting the glare of headlights they also reduce the driver's ability to see. A new goggle overcomes this objection, provided the wearer knows how to use the goggle and does so correctly.

The goggle has been devised with "bi-focal" safety features: a large clear area at the bottom of the lenses to give full vision in non-glare conditions; and a special tinted area at the top of the lenses for full vision in glare. For protection against sudden glaring headlights, the driver merely nods slightly, and sees clearly through the tinted area, eliminating the glare. When non-glare conditions return, the driver again looks through the clear glass.

The non-refracting lenses come in three styles: for men, for women, and for prescription glass wearers. The new glasses have undergone extensive night-driving tests by truck drivers, and are said to have met their approval. They are available from Jordan White.

For further details, use key number TS-5 on free inquiry card on page 73.

Knights of the Road

COURTEOUS TRUCK DRIVERS WHOSE chivalrous conduct on the highways may have gone unheralded in the past can now look forward to recognition. A new program of awards was announced by Homer Garrison, Jr., director of the Texas Department of Public Safety, who called it a "positive approach to the problem of improving motoring conditions on Texas highways."

Officially titled the "Hobbs Knight of the Road Awards Program," this new public service is co-sponsored by Hobbs Manufacturing Company, Fort Worth trailer building concern, and the Texas Safety Association, in cooperation with the Texas Department of Public Safety. According to representatives of the sponsors, the statewide program is designed to recognize and reward truck drivers "who, in the course of their regular duties of transporting goods on Texas highways, perform acts of outstanding courtesy to the motoring public." Anyone who drives a truck will be eligible for an award, which will consist of a certificate and an engraved gift—either an identification bracelet or a cigarette lighter.

The mechanics of the program are 1) Inspectors of the License and Weight Division of the Department of Public Safety will recommend for awards drivers whom they witness in the performance of acts of highway courtesy—helping other motorists in any way, rendering assistance at accidents, removing hazardous debris from the road, pulling off the highway to permit traffic to pass on incline, etc. 2) These recommendations will be evaluated by an awards board which will make awards to drivers whose courtesy is considered to be extraordinary, officially proclaiming them "Hobbs Knights of the Road." 3) Award-winning drivers will be publicly cited by representatives of the sponsors, and the gift each prefers will be presented to them. 4) Awards will not be limited to any specific number per month, but will be made as the board directs. 5) a grand award will be made annually to the most outstanding "Hobbs Knight of the Road," also selected by the awards board.

Not So Slippery When Wet

THE "SLIPPERY-WHEN-WET" ROAD, an important factor in many automobile accidents, has been the subject of study by abrasive engineers and a product has been developed which, when applied to the highway surface greatly enhances its skid resistance and may be an important means to reduce highway accidents. Scientific tests indicate that the new product may effectively reduce by ⅓ stopping distance of cars traveling 30 miles per hour on wet asphalt highways.

Road bonding compounds such as asphalt, tar, cement, etc., by themselves, possess relatively poor traction properties when wet. The co-

efficient of friction between the bonding agent of the road surface and the tire is too low to prevent sliding and skidding when wet. Should the stone and slag in the road bed be completely covered by asphalt, the edges of the stone or slag do not come in contact with the tire—and therefore, offers no resistance to prevent sliding and skidding. Highway engineers refer to a condition known as a "fat" or "bleeding" surface generally caused by too much asphalt and too little stone. This "fat" condition is aggravated by heavy traffic and/or excessively high temperatures.

The new product consists of a fused alumina abrasive material of over 2000 hardness on the Knoop scale compared with 850 hardness for quartz and flint, and 32 for limestone. It has a cleavage angle which provides many small rough protruding points conducive to good tire traction. Millions of these hard abrasive grains are impregnated in the road surface and present themselves to the tires, greatly enhancing their holding power even when used on slippery-when-wet roads.

Test Equipment

The Firestone Tire and Rubber Company which has developed scientific skid and slide testing equipment conducted the slide tests. The equipment includes a panel truck, on the rear of which is mounted a fifth wheel assembly. The fifth wheel contact with the road surface is controlled hydraulically by the technician within the truck. A mechanism measures and records the traction of the fifth wheel on the road surface. Using these figures in an empirical formula, it is possible to calculate the stopping distance of a car on the road surface being tested.

The tests resulted in the following findings:

Traveling at 30 miles per hour on the dry untreated asphalt highway, the distance required for stopping a car was 57 feet. When the untreated highway was wet and moderately slick, the car stopping distance was 100.4 feet. The area of the highway was treated with the abrasive product and the tests were repeated to give scientific comparisons. The stopping distance of a car traveling at 30 miles per hour on the dry treated highway was 57 feet, the same as the untreated dry surface. However, when the treated surface was wet the stopping distance was only 68.8 feet or 31.6 feet shorter stopping distance than on the wet untreated highway.

Experiments are also being made on concrete highways. General observations indicate improved safety conditions, but scientific data is not yet available.

Traffic Safety Program Pays Off at Army Post

DURING the calendar year 1953, Fort Monmouth, New Jersey, has made vast gains in traffic safety. This extra effort to produce safe-minded driving with special emphasis on the private driving of the military, has produced startling decreases in the number of auto accidents and traffic violations involving Fort Monmouth personnel.

Each man is given, upon his arrival at the post, an extensive lecture on the causes, frequency and results of automobile accidents. In addition, there are several demonstrations concerning reactions and stopping distances. During these demonstrations, any soldier is given the opportunity to try his reactions against the statistics. Invariably, the men are amazed to find that they are not as fast and clever with an automobile as they think they are.

"Refresher" Driving Classes

Prior to each holiday, weekend, and leave, and at other frequent intervals, everyone is required to attend refresher classes and lectures on safe driving habits. Heavy emphasis is placed on the subjects of driving fatigue, drinking and driving, following too closely the car ahead, excessive speed and other major causes of accidents. Twice each year, the individual privately-owned vehicles are inspected to insure that all of the necessary driving equipment is in good working order, and the requirements for post tags include at least a minimum liability of insurance coverage.

Close Cooperation

Fort officials cooperate closely with civilian law enforcement officers and make every effort to institute all possible safety measures. In addition to the soldiers' obligation to civil law and traffic regulations, the Uniform Code of Military Justice provides for the discipline of those persons who drive wantonly, recklessly, or while under the influence of alcohol. In cases where it is deemed necessary, the privilege to operate a motor vehicle while stationed at Monmouth can be rescinded.

Year	Injuries	Deaths
1951	65	4
1952	47	7
1953	34	2

The actual statistics for the years 1951, 1952 and 1953 clearly indicate the vast strides in safety. The figures for injuries indicate "lost time injuries" as well as those requiring official medical treatment.

Continued Decrease

Since, in effect, the whole purpose of the safety program is to eliminate all deaths and injuries due to automobile accidents, these figures definitely indicate that Fort Monmouth's low injury rate is being reduced even more. In addition to this notable record for off-duty driving by the military personnel of the post, 162 civilian and military drivers of federal vehicles have logged almost 8 million miles of accident free driving. Mr. J. G. Aldrich, Post Safety Director, has announced a decrease of 22 percent in the overall accident frequency for the entire installation for the year 1953.

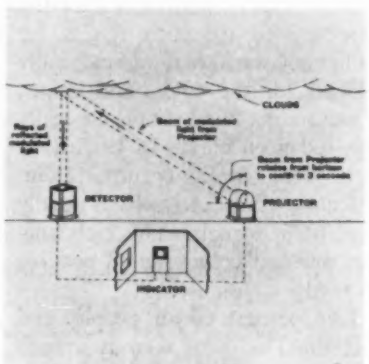
SAFETY IN THE AIR BEGINS WITH . . .

Newest answer to airport traffic control problems are illuminated markers. They show taxiing pilots runway and taxiway exits and entrances even in the worst weather conditions.

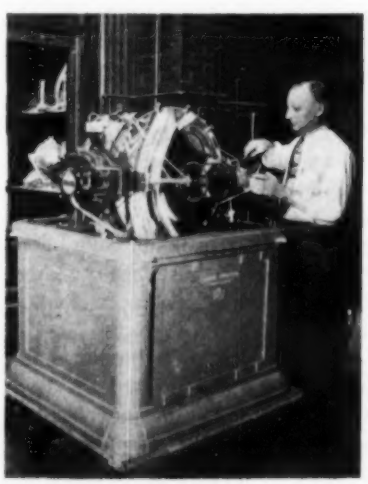
SAFETY ON THE GROUND

COMMERCIAL AIRLINES, military aircraft, and light private planes have established a remarkably safe flying record in this country. The occasional serious crack-up makes startling headlines and horrifying pictures, but it is only a small blot on an otherwise excellent performance. For every plane that crashes new scientific devices are being produced which make flying safer. Many of these safety devices add to air safety by making the ground on which aircraft must land safer. For example, two newly-introduced ground safety devices are now making their contribution to air safety.

The greater Pittsburgh airport is the first airport in the country to install a complete system of illuminated taxiway guide signs along field taxiway and runway intersections. The new signs make landings and take-offs easier for both tower personnel and pilots. Frequent ground control instructions by radio between tower and pilot are unnecessary; runways can be kept relatively clear of taxiing aircraft during airport "rush hours," allowing tower ground-control personnel more operational flexibility; and, because the signs tell a pilot where he is, as well as where he wishes to go, he can maintain a safe taxi speed of 35 miles per hour in darkness or bad weather without fear of suddenly being forced to turn his aircraft abruptly to avoid passing a correct turn-off point.



Combination of safety devices enables pilot to know weather conditions of his landing.



Projector registers new cloud ceilings.

Growing Traffic

The major contributing factor to the development of such an organized ground control traffic system has been the steady increase in air transportation. Landings and take-offs handled by Civil Aeronautics control towers topped the 17-million mark last year. As air traffic has grown, airport handling capacity also has increased. This expansion, with other factors, has developed gigantic fields—such as at Pittsburgh where 3 runways measure respectively 5,685, 5,900 and 8,000 feet. Bigger airports, such as this one, with longer runways, require more taxiway and runway intersections. Another impetus to ground traffic control is increased technical development. Better airport lighting, more adequate safety devices, and improved electronic and navigation equipment allow airports to handle more flights.

Pittsburgh's taxiway guide-sign system consists of two basic types of signs, one to indicate airport destination routes, the other to identify intersecting taxiways or runways. The signs are of aluminum box construction with from 1 to 6 interchangeable letter panels. The letters are orange-yellow translucent plastic against a black background. Light bulbs placed behind make them luminous at night even from more than 500 feet away.

To inform a pilot that he is approaching an intersection and to identify the intersecting taxiway or runway, the signs flash numerals which also indicate the direction to the corresponding numbered ends of the runway. Taxiways, on the other hand, are identified by letters.

Weather Conditions Above

A weather instrument that tells pilots what sort of weather conditions exist over runway approach zones has also been introduced. The new device, a rotating-beam ceilometer, registers a new cloud ceiling every 6 seconds, enabling control towers to relay almost instantly to incoming aircraft the exact locations and movements of cloud or fog layers. In conjunction with the ceilometer another device, called the transmissometer has been used to further aid ground-air safety. It consists of a projector installed along the runway which sends a concentrated light beam across a 500-foot span to a receiver, which transforms the beam into an electronic signal to accurately indicate actual runway visibility conditions.

Working together the two instruments are credited with narrowing the figure for missed approaches from 8 to 3 percent for all flights in visibility conditions of 1 mile or less. By combining the transmissometer readings with those of the ceilometer, control tower personnel also have an accurate picture of weather above and along the runway and approach areas. Since the transmissometer gives runway visibility conditions and the ceilometer measures the penetration as well as the heighth of the cloud layers, a pilot, approaching the runway to land, can be given the exact state of weather conditions that he will confront as he lets down his ship.

Thus, safety research forms the basic element in the chain of research—ground safety—and safety in the air.

Pictures by courtesy of Crouse-Hinds Company; and, top, U. S. Army Air Corps.

New Stop Light Colors?

HOW MANY OF THE 2500 TRAFFIC deaths annually attributed to "failure to observe" traffic signals are actually due to "inability to see?" Specialists at the Color Research Laboratories of Sun Chemical Corporation suggest that many of the drivers who were killed or injured could not tell whether the light was red or green.

Color experts point out that the time-honored red-green system for traffic signals makes things especially difficult for the color-blind driver, as many color-blind people are really only red-green blind. In 1952, 25% of all traffic deaths occurred at intersections. Yet intersections usually have traffic signals. The facts suggest different colors should possibly be used.

Five percent of all people, and four times as many men as women are red-green blind. With 50,000,000 automobiles on the road and an even larger number of licensed drivers, there are potentially 3 million drivers who must play "follow the leader" in traffic, being unable to determine for themselves whether to stop or go. The simple expedient of using a different two-color system —blue and yellow is one combination suggested by color research men—would help many color-blind people to operate cars with the same efficiency as those with normal color vision.

A new system undoubtedly would take a bit of getting used to. Red is the traditional danger signal. Blue and yellow lights might cause a good many red faces among oldsters with many years of driving behind them.

Holiday Hazards

ONE OR BOTH OF THE DRIVERS are at fault in about 75 per cent of all fatal accidents. So the best advice for avoiding a traffic accident is to think twice—once for yourself and once for the other guy. With millions of vehicles—and drivers—jamming the highways, the chance for driver mistakes is considerable, warned New York State Safety Director Thomas W. Ryan.

"Traffic accidents don't just happen—they are caused," he said. "They are caused by human indifference, ignorance, recklessness, or lack of plain courteous and decent behavior. A car does not go out of control until the driver loses his control over it."

In an effort to reduce accidents, particularly during summer holidays, five points are suggested to help balance the extra highway hazards: 1. Don't drive after drinking—even a little. 2. Cut your usual cruising speed 10 miles an hour. 3. Double check before passing or changing lanes. 4. Don't follow the car ahead too closely. 5. Don't compete in traffic—let the other guy go first.

Two Safety Awards

THE TRAILMOBILE NATIONAL safety trophy, awarded annually by the American Trucking Associations, Inc. to the trucking company with the best safety record in the nation in 1953, was presented to the Pacific Intermountain Express, Inc., of Oakland, Calif., by Jack B. Cole, president of the A.T.A.

The Trailmobile trophy is awarded by Trailmobile Inc. to the company with the best safety record among firms operating 20,000,000 miles or more a year.

For making the greatest contribution to general highway safety in 1953, outside its own organization, the Dan Dugan Oil Transport Company, of Sioux Falls, South Dakota, was presented with the Trailmobile tank-truck trophy.

Competition for this Trailmobile trophy was among carriers which have operated tank-trailer units for a total of more than 10,000,000 miles during the past year.

Fire Investigations

(Continued from page 57)

current device prevent it? Very often the answer is there, particularly in those first few moments after the fire, before anything is touched.

In addition to these engineering reasons why this information is needed, there is another factor involved——"arson." If every fire were carefully investigated, it would be one of the greatest possible deterrents to arson. A study of fire causes and arson inevitably come together. Both purposes could be admirably served by greater emphasis on the determination of the cause of every fire and why a failure occurred. Photographs taken of the suspected point of origin of every fire would be of inestimable value.

When an explosion occurs, it is even more important to obtain and record immediately important information which could be the basis of future engineering changes. For example, some time ago an explosion occurred in a gas fired oven. This oven was equipped with complete safety combustion controls, but nevertheless it was obvious that flame failure occurred and the gas valve failed to close. Why? Before an investigation could be made, a maintenance man dismantled the controls. The result? We will never know what part of that system failed until the next one blows; and then someone may pay with his life.

What can we expect then as a result of these investigations? Properly and carefully made they will provide us with the data that will show the failures in our modern technology. Armed with this information we will be in a position to determine the research needed to control our unusual fire problems and will be able to spotlight our relatively simple fire problems that are largely a matter of human failures.

It is equally as important to investigate small industrial fires and classify and tabulate the results as it is to probe major catastrophes. Our major industrial fires were all small incidents at one stage of their development. By understanding thoroughly the conditions which allow small fires to develop we will automatically eliminate major catastrophes.

This is a plea for careful, painstaking fire investigations of all fires. I am certain that such a program will turn up a lot more suspicious fires than we are now recording. A well publicized program of thorough investigations of every fire is bound to discourage both the "criminal" and the "involuntary" arsonist. This, in itself, will be a big step forward; in addition, we will be obtaining data to enable us to make the engineering changes necessary to make this a safer world in which to work and live.

From an address delivered at the National Safety Congress.

Dry Chemical Tested on Seed Fires

A NEW TECHNIQUE FOR EXTINguishing seed fires has been developed which calls for the use of dry chemical fire extinguishers to knock down the flames of a seed fire.

The new method is suggested by Ansul Chemical Company, following tests by the California Department of Agriculture.

In many instances, water used as an extinguishing material has caused as much, or more, damage to the seed as the fire, resulting in physical and physiological changes that lower the vitality of the seed stocks.

The effect of dry chemical upon the seed was not known. To determine the effect of this material upon the viability of seed, the California Department of Agriculture conducted tests with 5 different brands of dry chemical upon six different kinds of agricultural seeds.

At the end of the tests, the Department said, "It appears that the 5 commercial brands of dry chemical fire extinguisher materials were not detrimental to the viability of the six seed stocks studies."

Thermostat Fire Control

(Continued from page 53)

(4) Alarms sound both in the plant and at a central fire station to summon assistance to the scene.

In addition to the automatic shutdown of equipment during an overheat emergency, a manually-operated, water spray fire extinguishing system inside the tower is available for use at the discretion of plant personnel.

Difficult service conditions inside the towers required a careful selection of the actuating controls. The fine soap dust always present inside the tower presents a serious problem in obtaining reliable, instantaneous operation of the overheat detectors. This problem was overcome by selecting a hermetically sealed detector. As shown in Fig. 1, the contacts that actuate the master release circuit are hermetically sealed inside a stainless steel outer shell, which protects them against dust, water and possible corrosion. Because of the hermetic seal, the units are inherently explosion-proof and therefore safe to use in any atmosphere containing dust or combustible gases.

The drying towers are equipped with other devices. For example, the air heater itself is equipped with a timing device that assures an air purge of the heater and tower for a predetermined period before the igniter for the heater can be actuated. Flame failure controls shut down the heater in case the heater flame is inadvertently extinguished. Furthermore, the operation of the heater is interlocked with the safety controls in the rest of the equipment, so that the heater cannot be started or will cease operation if air flow through the tower is interrupted or abnormal conditions exist.

The result of this system of interlocks and overheat controls is a continuous soap and detergent drying process that is as safeguarded against mechanical and human failure as careful engineering can make it.

Pictures by courtesy of Fenwal, Inc.

"What's the Law?"

Edited by
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National Federation Insurance Council
Past Commander, American Legion, Post 10,
Newark, N. J.

• • •

Outside of the Act

A BOSS DRILLER IN charge of procurement of parts left his employment an hour early on Saturday afternoon. Ordinarily, he returned to his home town by bus after quitting time on Saturday; but on this date, he had a fellow employee drive him to catch a train to another city near his home town, ostensibly to get new valves to replace those which had burned out and would be needed on Monday morning to continue the job.

As the car raced along the highway to make the train it was involved in an accident which killed the boss driller. However, the Kentucky Court of Appeals held that, since the stores in the city for which he was headed would be closed long before he could get there by train, and since the city was near his home town, the claim for compensation as a result of an accident during the course of employment should be dismissed.

GEORGE T. WILLIAMS & SONS vs. COFFEY, Kentucky Court of Appeals, October 12, 1951.

Controversial Injury

AN AUTOMOTIVE WORKER WAS injured when the hood of an automobile on which he was working dropped several inches, cutting one of his index fingers and allegedly striking his foot. He immediately went to the infirmary and had his hand bandaged. No record, however, was made of any foot injury. Several days later, he returned to the infirmary because of pain in his foot. It finally became so painful that he was forced to leave his employment.

Two doctors examined the worker and opined that the injury did not result from the accident but that his ailment was controversial. The Court held that the worker was entitled to compensation as the evidence indicated that he had suffered a flattening out of the anterior arch and a traumatizing of the nerve, caused by the falling hood.

AUTRY vs. GENERAL MOTORS BOP ASSEMBLY PLANT, Georgia Court of Appeals, No. 33,880, February 19, 1952.

Were To Be De-energized

A CITY, WHICH operated a municipal electric light and power generation and distribution system, entered into a written agreement with a private electric company for the removal of certain street lighting fixtures. The lines were to be de-energized. An employee of the electric company, while working on the city street lights in line with the agreement, did touch a wire and was electrocuted instantly.

The electric company did not carry workmen's compensation insurance and the widow brought an action for death benefits against the city. She received an award which later was reversed by the Colorado Supreme Court.

STATE COMMISSION FUND (INSURANCE) vs. ALISHIO, Colorado Supreme Court, No. 16,793, March 3, 1952.

Chivalrous Horseplay—Not Compensable

A FACTORY WORKER, in a playful manner, twice pulled another employee out of the pay-line so that a lady employee could receive her pay first. On the second attempt, the other employee pushed back the factory worker, who fell and broke his hip.

No employee had the right to tell another employee to step out of his place in line and the factory worker was not acting under the direction of any supervisor. At the time of the hearing, the injured worker testified that a third male employee suggested it to him and that it was done both as a sportive thing and as an act of courtesy to the woman. The Court held that the injury arose from "horseplay" and denied benefits.

BIBB MANUFACTURING COMPANY vs. COWAN, Georgia Court of Appeals, No. 33,805, March 8, 1952.

Inconsequential Departure—Compensable

A CLERK IN A chemical storeroom was taking inventory of his stock one evening, when he decided to check with an associate professor of chemistry across the corridor. Accompanied by the campus policeman, whom he met in the hall, he went into the professor's office.

The policeman carried a revolver and invited the professor to feel how heavy it was. When she hesitated, he assured her that it was empty and by way of proof, exhibited a number of bullets in his left hand. She handled the gun momentarily and then returned it to him. The gun was then passed back and forth by the clerk and the policeman, until the clerk, suddenly and without explanation, put the gun to his head and pulled the trigger. The gun fired and the clerk fell dead. The policeman testified that he had reloaded the gun after receiving it from the professor and put it back in the holster, and that the clerk had snatched it from him.

The court denied all appeals that the clerk was not under the compensation act and an award for death benefits was made to the widow.

HALL vs. CARNEGIE INSTITUTE OF TECHNOLOGY, Penna. Superior Ct. Pittsburgh District, No. 82, March 18, 1952.

Epileptic Seizure—Not Compensable

A MANUFACTURING COMPANY employee had suffered from epilepsy for a number of years. One day he suffered an attack which caused him to fall to the concrete floor of the plant, striking his head thereon, as a result of which he suffered a cerebral concussion.

Even though the employee admitted that he was not doing anything in connection with his employer's business at the time of the seizure and that the seizure was in no way caused by the employment, he contended that the concrete floor of the plant was a hazard of his employment and that it contributed to his injuries.

It was held by the Superior Court that it was not within the meaning of the compensation act that the concrete floor produced or contributed to the injury. Benefits were denied.

HENDERSON vs. CELANESE CORP., Superior Court of N. J., 30 N. J. Super 353, April 28, 1954.

N.Y.U. Safety Courses

THE FALL TERM, EVENING PROgram in industrial and traffic-accident prevention training offered by the Center for Safety Education, New York University begins September 28, 1954. The present curriculum makes it possible for students enrolled for a full program of eleven courses to fulfill requirements for a Certificate in Industrial Safety, or a Certificate in Traffic Safety. Students may also elect courses in fields of special interest.

Courses to be offered in the fall term are:

Accident Prevention—Its Background, Objectives, and Relationships

The Philosophy and Basic Principles of Accident Prevention

Industrial Hazards—Mechanical and Personal. Control Methods

Fire Prevention and Protection Inspection

Organization of Fleet Safety Programs

Vision in Industrial Safety and Motor Vehicle Operations

Effective Speaking in Accident Prevention

Principles of Safety Inspection

Additional Courses

In addition, the following special courses designed for particular groups will be offered:

Marine Accident Prevention

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Information about these and other courses and activities may be secured by writing the Center for Safety Education, New York University, Washington Square, New York 3, New York.

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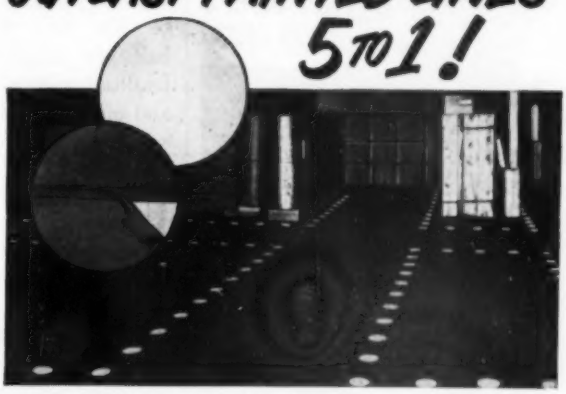

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(For details, use Key # U-23 on card, page 73)

INSTITUTED IN 1953, THE WHITE Elephant Award has aided in the tremendous drop of ground accident cost rates for the 4706th Defense Wing which headquarters at O'Hare International Airport, Park Ridge, Illinois. The White Elephant is a traveling award given each month to the Commander of the unit within the Wing with the highest ground safety accident rates for the preceding month.

The Commander of the 4706th Defense Wing, Colonel William D. Greenfield, reports that in the year preceding the inauguration of the White Elephant campaign, 1952, the cost to the Wing as a result of ground accidents was over $500,000.00. During 1953, with the aid of "Dumbo," this cost was cut in half. In addition, there were 16 fatalities within the Wing in 1952 and only 6 during 1953.

• • •

EMPLOYEES OF THE WESTINGHOUSE Electric Corporation's East Pittsburgh Divisions have received national recognition from the National Safety Council for their outstanding safety record during 1953. Three divisions of the plant were presented the Council's highest industrial awards: the Switchgear Division received the Award of Honor for having worked 3,472,196 hours during a four-month period without a lost-time accident; the Transportation and Generator Division were also awarded the Award of Honor for having worked a three-month period, or 3,300,950 hours without a lost-time accident; contributing to the Feeder and Service Division's Award of Merit was the Trafford Foundry's record of 1,536,003 accident-free hours.

According to Myron L. Miller, supervisor of safety at the plant, the safety record set by Westinghouse is the best in the 58-year history of East Pittsburgh operation. During the year, employees worked a total of more than 37½ million hours with an accident frequency rate of 1.9 as compared to the general industry rate of 8.4, and with an accident severity rate of only .10 as compared to .88 for general industry. These rates also compare favorably with those of the electrical equipment industry which has frequency and severity rates of 3.38 and .33, respectively.

• • •

AN INJURY-FREE PERIOD OF 1,410,716 man-hours worked in the Gas Turbine Division of A. V. Roe Canada Ltd. has earned the division an award of merit from the National Safety Council. The Division is one of eight plants selected from among 880 included in the Aeronautical Industries Section throughout North America.

• • •

THE SAFETY PROGRAM OF THE ST. Regis Paper Company has resulted in several awards to company mills and plants by the Pulp and Paper Section of the National Safety Council and also by industrial safety associations.

For the second consecutive year,

the St. Regis printing paper mill at Kalamazoo, Mich., won the National Safety Council's Award of Honor. By winning the Award for a second time, the Kalamazoo mill becomes one of the first mills in the United States to achieve this record. The Vancouver, B. C. multiwall bag plant won a Certificate of Commendation and also first place in Division 2, Converting Group, for operating through 1953 without a loss time injury. The Vancouver plant also won the Canadian Pulp and Paper Association's Western Converting Annual Safety Award, the British Columbia Workmen's Compensation Certificate of Meritorious Safety Performance, the St. Regis Multiwall Packaging Division's Annual Safety Plaque, and the St. Regis annual company-wide Safety Plaque. Up to April 1, 1954, this plant had operated 1064 days without a lost time injury.

Four Divisions of St. Regis completed 1953 with a decrease in accident frequency rates over 1952, and the record shows that the overall accident frequency rate for all St. Regis operations has steadily declined.

• • •

AN AWARD OF HONOR WAS PRESENTED to the Government Printing Office by Sen. Leverett Saltonstall in commendation of its outstanding safety record. The honor award comes to the Government Printing Office for an accident frequency rate 59 percent lower than the printing and publishing average and a severity rate 81 percent under the industry average. The printing office has worked 2,681,088 manhours without a lost-time injury, the best record in the history of the Office. Other awards received in 1953 were for long periods without injury or reduction in injuries below previous records.

• • •

AN AWARD OF MERIT FOR COMPLETION of more than a million man hours without a lost-time industrial accident has been won by Automatic Transportation Company, a division of the Yale & Towne Mfg. Co. The division also won the Yale & Towne trophy for having accumulated the greatest number of accident-free man hours of any plant in the entire Yale system.

• • •

AN AWARD OF HONOR FOR ITS LOW injury rate from 1951 through 1953 has been presented to the Manufacturing Division of Ceco Steel Products Corporation by the National Safety Council. The injury frequency rate was 67 percent less than the previous record.

• • •

IN WINNING AN AWARD OF HONOR for 1953, the Davison Chemical Corporation, now Davison Chemical Company Division of W. R. Grace & Co., repeated successes scored in 1950 and 1951. Davison claims to be the only company with operations in phosphate rock mining and fertilizer manufacture to have received it. Combined figures for Davison and the remainder of the industry showed the company was 59.7 per cent below the average, and in accident severity 68.9 per cent below average.

• • •

FOR THE YEARS 1950–1953, EMployees of the Oswego Falls-Sealright plants in Fulton, N. Y. compiled a safety record of only 3.6 accidents per million man hours worked compared with a 13.4 average for the pulp and paper industry as a whole for the three year period—good for an Award of Honor from the National Safety Council.

• • •

COMMENDING THE FACT THAT THE company completed one and one-half million man hours of factory work without a lost time accident, the Hallicrafters Co. has been awarded a certificate of merit by its insurance carrier.

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Prevents death and injuries from falling.

SAFETY DEVICE FOR LADDERS

Easy and inexpensive to install: Clamps to rung, peg, pole or frame. No welding or cutting.
Simple to operate: No upkeep. Requires no attention from climber. Anyone can use it.
Safety Specifications: High safety factor. Will not rust or corrode. **Write for folder.**

SAFETY TOWER LADDER CO.
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BURBANK: CALIFORNIA

Also Manufacturers:
Safety Lifeline Lock
Member
National Safety Council

(For details, use Key # U-29 on card, page 73)

WORLD'S LARGEST STOCK OF SAFETY BADGES

1933 SERIES . . . 1¼" dia. hard glazed enamel, heavily gold plated. Pin and safety lock catch. $10.50 doz. (plus Fed. Tax.)

SAFE DRIVER AWARDS
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(For details, use Key # U-30 on card, page 73)

What's New...

For your convenience in obtaining descriptive literature of products listed here, use the Reader's Inquiry Card. Just write in the code number given with each item. Or send written requests to:

Service Dept.,
SAFETY MAINTENANCE & PRODUCTION

EXPLOSIVE GAS INDICATOR

(Use Key # 644 on Inquiry Card on page 73)

A POCKET model instrument designed to detect and warn of concentrations of explosive gas in any atmosphere is announced by the Hogart Engineering Co. Known as the Page Explosive Gas Indicator, the device is equipped with a red light which flashes for a longer duration as the concentration of combustible gas or vapor increases toward the lower explosive limit, until a steady red light indicates that the atmosphere being tested is explosive.

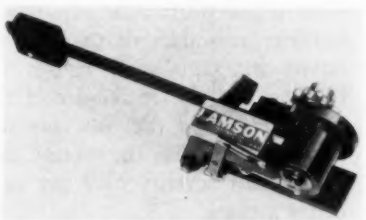
Compact and easy to use, the instrument is available in a pocket model—weight 3 ounces—with a plastic carrying case for protection against dust and moisture, and also a heavy-duty portable model and a lantern model. It is also made in numerous models and styles for permanent installation and continuous sampling of the atmosphere.

AUTOMATIC FIRE ALARM

(Use Key # 645 on Inquiry Card on page 73)

AN AUTOMATIC, self-powered single station fire alarm which creates a long-lasting 95-decibel shriek when fire breaks out in its locality has been placed on the market by the Fyr-Larm Co. Called Fyr-Larm, it is designed for use in homes, industrial buildings, warehouses, stores, tractor-trailers, etc. The entire unit measures 15" in length for the standard model —18" for the industrial model—and weighs approximately 3 pounds—4 pounds for the industrial model.

When the surrounding air reaches approximately 140 degrees F., the unit becomes activated. Compressed Freon gas escapes activating a shrill whistle which lasts a minimum of 5 minutes—8 minutes for the industrial model. Installation is simple, requiring no electrical wiring, attachment to a wall at ceiling level in a vertical position is all that is necessary. The unit should be weighed at six-month intervals; if found to be below weight stamped on the cylinder, unit should be returned for servicing.



CHAIN-DRIVE OVERLOAD PROTECTOR

(Use Key # 646 on Inquiry Card on page 73)

A NEW device to protect chain drives of all types from overload by tripping a limit switch in the event of excessive tension on the drive leg is offered by the Lamson Corporation. It is said to provide a ready-made component to protect equipment, personnel and facilities from hazards arising from temporarily excessive burdens on chain driven equipment.

Known as the Lamson Overload Protector, the device consists of an eccentrically located idler sprocket counterbalanced by a weight-loaded arm. The counterbalance is adjustable so that the device will operate at any chain tension up to 1,000 lbs. Design is simple, rugged and maintenance-free. A locking lever is arranged so that manual resetting is required to energize the drive once an overload has caused it to act. There are four basic applications—to double and single sprocket vertical chain drives, double sprocket rotary chain drives and single sprocket horizontal chain drives—as well as other applications in special situations.

NEW RESPIRATOR FILTER

(Use Key # 647 on Inquiry Card on page 73)

NEW filter developed by American Optical Company's Safety Division protects industrial and laboratory workers against air-borne particles, including the hard-to-handle 0.3 micron size, with 99.99% efficiency. This efficiency is assured in individual filters by testing each one on a specially built testing device at the factory.

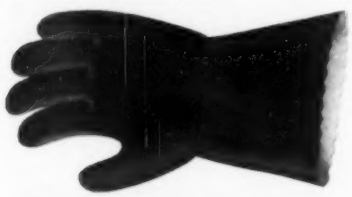
The Super Micro-Toxisol Respirator removes air-borne radioactive matter and other toxic dust, mist and fumes. It also protects against spores, viruses, bacteria, fungi and such compounds as beryllium, selenium, arsenic, thallium, uranium, cadmium, palladium, thorium, platinum, phosphorous and chromium. Effective filtering area of 45 square inches is contained in a compact unit which does not interfere with the wearer's vision. This large filtering area in a small unit is achieved by shaping the filter element in the form of a multi-folded corrugated cylinder. Each unit is contained in a lightweight aluminum cartridge which both protects the filter while in use and eliminates all possibility of damage in installation. Replacement is easy and the unit withstands rough handling. Respirator face pieces take two filters, providing a total filtering area of 90 square inches per respirator; face pieces are comfortable and provide a snug fit.

COLLAPSIBLE SIGN

(Use Key # 648 on Inquiry Card on page 73)

A NEW heavy-duty sign for road construction and similar uses has been designed by Standard Signs, Inc. A large "Road Closed" sign which swings freely in a rigid angle iron frame is topped by two or more red flags. The frame also supports a "Detour" sign and a directional arrow sign so that complete directions are given by this one stand. The frame folds so that the entire stand is collapsible and can easily be moved from one job to another.

The swinging sign which is interchangeable with signs with other wordings measures 24" by 24". The entire stand measures 49" to top of the flags and 65" wide overall, and weighs 23 pounds. Signs and frame are finished in synthetic porcelain enamel. The "Road Closed" sign has a yellow background, and the other signs have a white background.



SEAMLESS PLASTIC GLOVE

(Use Key # 649 on Inquiry Card on page 73)

A NEW glove for industrial use has been announced by the Pioneer Rubber Co. Called Stanflex, it is plastic-coated and features a 47 square inch seam-free work surface that resists wear from abrasion and an elastic jersey knit lining that permits hand dexterity. New single-seam lining construction, developed for the glove, eliminates all seams on those surfaces which are exposed to abrasion. Another important factor is the high resistance of the polyvinyl chloride coating to the destructive effects of oils, acids, caustics and abrasion.

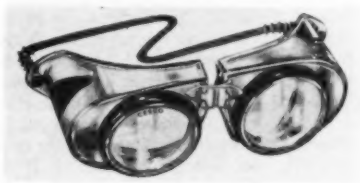
Said to provide comfort and dexterity, the plastic coating makes the glove liquid-tight, keeping the wearer's hands away from liquids, and the elastic jersey knit lining provides a comfortable surface next to the hand. Available in knit-wrist, band-top and guantlet styles; the new "dark-blue" Stanflex also features an all over non-slip satin finish, curved fingers and wing-style thumb.

CONDUCTIVE FLOOR COATING

(Use Key # 650 on Inquiry Card on page 73)

GAINING acceptance in hospitals, industrial and ordnance plants, warehouses, fuel depots and other buildings where static problems exist is Elimstat, a new floor coating manufactured by the Walter G. Legge Company. The spark-proof composition produces a conductive surface that safely disperses dangerous static currents. Although not a paint, it is easily applied to floors with a paint brush or applicator. Two coats (allowing drying time between) are adequate for most floors.

The coating complies with requirements of N. F. P. A. Code #56. Tests show that it maintains necessary ohm resistance for months even under heavy abuse. If worn spots should occur, the manufacturer states that the application of one new coat will completely restore effectiveness.

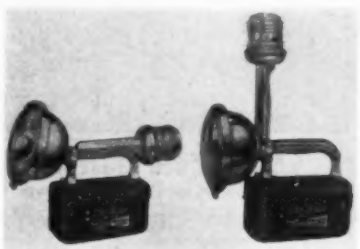


WELDERS' HELPERS' GOGGLES

(Use Key # 651 on Inquiry Card on page 73)

RECENTLY announced by the Chicago Eye Shield Company are new welders' helpers' goggles made of a new light-weight plastic with an ultra-violet ray inhibitor. The new formula plastic overcomes fogging, crazing and brittleness which result when many transparent plastics are subjected to ultra-violet rays.

Designed to be worn as flash goggles by welders' helpers, or by spot welders, the Cesco No. 548-G (with round rubber head-band) and Cesco No. 549-G (with flat elastic or rubber headband) are excellent for outside use. Made in cover goggle style, they are large enough to be worn over personal glasses if necessary. Furnished in green only, in welders and chippers styles; with 50 mm Clear Super-Safety, Anti-Glare or Cescoweld Lenses.



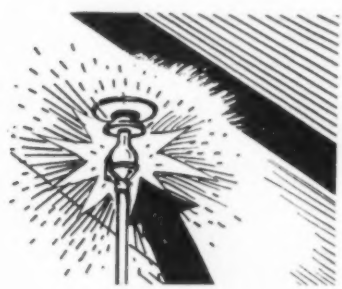
PORTABLE LAMP FEATURES BEACON

(Use Key # 652 on Inquiry Card on page 73)

A NEW combination portable electric hand lamp and flashing red beacon has been announced by U-C Lite Manufacturing Company. The new Beacon Lamp, available in both sealed beam and standard bulb type models, features the exclusive two-position flashing beacon. When the beacon arm is folded down, it fits snugly over the handle. In this position, the flashing bulb, covered with a red Fresnel lens of molded plastic, serves as a taillight. When carried in this manner, the lamp not only lights the way ahead but also flashes a warning to vehicles approaching from the rear.

The red flasher becomes a tower beacon when the arm is raised to the upright position. The light is then much higher than any other part of the lamp, assuring unobstructed visibility from all directions when placed on the ground or on top of an automobile. Because the lamp and beacon operate either independently or together, the unit can be used as a hand lamp only, as an emergency or signal light only, or as a combination of these two.

The lamp and beacon are powered by one standard six-volt lantern battery housed in a sturdy steel case finished in red baked enamel. Battery replacement can be made in a very few seconds because there are no wires to connect. Lamp-to-battery contact is pressure type.



INCANDESCENT LAMP CHANGER

(Use Key # 653 on Inquiry Card on page 73)

FOR the safe changing of incandescent bulbs, the Gets-A-Lite Co. announces a simple, easy-to-handle, effective device. Called Gets-A-Lite, it removes and replaces any size lamp from 10 to 1500 watts—including flat bottom lamps—and is small enough to get into flush fixtures.

The device consists of a soft suction cup at the end of a handle to which a string is attached. The suction cup is placed against the lamp and the string pulled, causing the cup to "grab" the lamp allowing easy manipulation. The suction on the lamp is only released when the string is intentionally pulled. The changer is equipped with a standard five-foot wood handle. Extension handles (5 ft.) with attaching clamp available.

Also available is another model for changing horizontally mounted lamps on theatres, signs, billboards, etc. It consists of an insulated, aluminum alloy, telescoping handle and a double cup mounted perpendicularly to the top of the handle. It operates on the same principle as the changer used for overhead lamp changing but has the additional advantge of permitting extraction of "dead" bulbs and replacement with "live" bulbs in the same operation. Suitable for 10-15 watt sign bulbs.

WHAT SHOULD BE NEW?

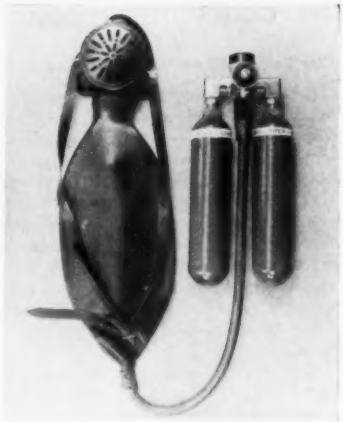
(Editor's Note: Readers are invited to send in their suggestions for new products or devices that are needed for accident prevention, hygiene or maintenance. Or maybe you have the answer to some other reader's problem.)

ONE READER inquires why there isn't a simple device that can be used by the layman for testing night driving vision, specifically, resistance to glare and recovery from glare.

REVIEW LIST OF RECENT "NEW PRODUCTS"

New developments bring new problems. Perhaps the new products described in recent editions can solve your safety problem. For complete details, insert the Key Number on the Readers Inquiry Card on page 73.

April 1954 issue:	Key Number
Industrial Noise Survey	A-955
New Lightweight Goggle	A-956
Plastic Rope	A-957
Conductive Wax	A-958
Water-Resistant Wax	A-959
Electric Dryer Attachment	A-960
New Alkyd-Type Paint	A-961
New Pilot Valve Series	A-962
Toggle Fuse Puller	A-963
Ventilated Welding Helmet	A-964
Stack Dust Control	A-965
Spring-Lock Helmet Fastener	A-966
Non-Flammable Cleaner	A-967
Non Skid Grating	A-968
Gasoline Filler Can	A-969
Portable Dust Bin	A-970
New Welding Goggle	A-971
Plastic Label Tape	A-972
May 1954 issue:	
Floor Machine Dust Pick-up Attachment	A-973
Oil & Grease Absorbent	A-974
Powered Driving Tool	A-975
Aluminum Stair Tread	A-976
Dust-Measuring Equipment	A-977
Salt Prevents Heat Fatigue	A-978
Waterproof First Aid Kit	A-979
Weed Killer	A-980
2-Quart VL Extinguisher	A-981
New Chemical Goggle	A-982
Barrier Skin Cream	A-983
Explosion-Proof Electric Fork Trucks	A-984
Assortment of Hydraulic Equipment	A-985
Distortion Proof Electrical Connectors	A-986
Tool Loosens Frozen Parts	A-987
Anti Slip Neoprene Glove	A-988
Flammable Liquid Storage Cabinet	A-989
Telescoping Stretcher	A-990
June 1954 issue:	
Sound Absorbing Units	A-600
Folding Pole Litter	A-601
Combustible Gas Detectors	A-602
Plastic Floor Mat	A-603
Poison Ivy Medication	A-604
Lightweight Hand Truck	A-605
Adjustable Lighting Units	A-606
Chemical-Resistant Clothing	A-607
Portable Scaffold Unit	A-608
Hinged-Bridge Spectacles	A-609
Safety Shoes	A-610
Cellulose Sponge Mops	A-611
Aluminum Step for Ladders	A-612
Conduit Fittings for Hazardous Locations	A-613
Driver Testing Equipment	A-614
Automatic Parts Washer	A-615
Power Press Guard	A-616
Folding Truck Step	A-617
Flashlight for Hazardous Locations	A-618
Floor Materials Selector	A-619



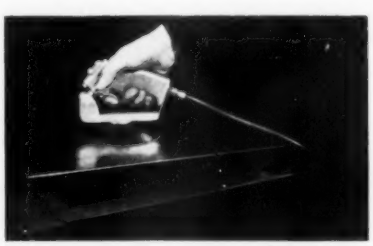
BREATHING APPARATUS WITH ESCAPE CYLINDER

(Use Key # 654 on Inquiry Card on page 73)

DESIGNED for use by firemen and in industrial plants where exposure to breathing hazards is of short duration, the Pocketaire has been developed by the Cycle-Flo Co. The lightweight unit, weighing 4½ pounds, is completely self-contained and features a 5 minute escape cylinder. When the 5 minute working cylinder is exhausted, the escape cylinder may be opened and the user is assured an additional safety margin, eliminating the need of watching a pressure gauge and permitting the user to concentrate on the job at hand.

A larger model, designed for use over a longer period of time, weighs 8½ pounds. Utilizing the same mask assembly, regulator, and shoulder holster as the smaller model, it is equipped with a 25 minute working cylinder and the auxiliary 5 minute escape cylinder. The cylinders are interchangeable, and the units may be recharged from any standard oxygen cylinder.

The U. S. Bureau of Mines has not set up a schedule for testing this type of equipment, but it has been accepted and is used by various municipal organizations for short duration hazards.



VACUUM SHEET-LIFTER

(Use Key # 655 on Inquiry Card on page 73)

DESIGNED for safely and easily separating or moving sheets of steel, even where adhesion caused by oil makes separation difficult, this device, offered by the F. J. Littell Machine Co. and called Pres-Vac Sheet Lifter, is of simple, rugged construction. A vacuum is produced by passing compressed air through the venturi at 45 pounds psi, which is conveyed to the rubber cup through passages in the handle.

While in conventional "slap-on" type lifters vacuum is lost from the time of application, in the new device a vacuum of 22 inches of mercury is constantly produced by the continual flow of compressed air through the venturi. As long as the trigger is held down, the cup will be able to pull 11 pounds psi. The neoprene cup is oil resistant, and the one-piece cast aluminum handle is of sturdy construction.

The pressure of air flowing through the venturi should be 45 pounds psi to produce maximum vacuum. A regulator is supplied to produce this desired pressure. A vacuum of less than 22 inches results when the pressure varies from the required 45 pounds psi.

SAFETY CLEANER

(Use Key # 656 on Inquiry Card on page 73)

A NON-FLAMMABLE, non-corrosive and non-toxic water soluble concentrate, FO-169, has been developed by Fine Organics, Inc. The product is a general purpose, triple-action maintenance cleaner for effective, safe cleaning of wood, concrete and composition floors, painted walls, woodwork and metal trim. It is a liquid concentrate designed to be diluted with water for removal of dirt, grease and oil.

The cleaner contains wetting agents, emulsifiers and dispersing agents, eliminating the use of solvents, acids, caustics and abrasives. It rinses off completely with water, giving a clean and film free surface, safe for any kind of floor, whether wood, asphalt, cement or terrazzo and any kind of floor covering, such as linoleum, rubber and asphalt tile. It has no odor and is said to replace gasoline, naphtha and chlorinated solvents for general purpose cleaning.

LINE MARKING MACHINE

(Use Key # 657 on Inquiry Card on page 73)

MANY new features are incorporated in the design of a line marking machine offered by Sargent & Sowell, Inc., manufacturers also of all types of safety and industrial signs. Called Mark-Rite, it may be used with paint, lacquer or lime and water for painting guide lines of all types. The new machine features self-cleaning valves, interchangeable brush assembly permitting the use of 2", 3" or 4" brushes, large wheels and an over-size filler cap allowing speedy filling on the job. Lightweight, compact and portable it is built for rugged performance with a minimum of maintenance.

WATERLESS HAND CLEANER

(Use Key # 658 on Inquiry Card on page 73)

A NEW approach to industrial hand cleansing is announced by The Milburn Company. After field tests, Ply Waterless Hand Cleaner is said to combine superior cleansing quality with positive skin protection.

The new product is described as a non-alkaline which borders on the acidic side with a ph 6.0-6.5 close to that of average healthy skin. Emphasis is given to the absence of solvents, ammonia and caustics, with the cleaner's soothing effect on the skin attributed to ingredients which, it is stated, are found only in dermatological and cosmetic creams and which up to now have not been present in industrial type cleaners. A special emollient prevents defatting of the skin. The need for a masking perfume, objectionable to many workers, has been eliminated because of the absence of halogenated solvents, aromatic solvents, gasoline, kerosene and turpentine. Other features said to be possessed by the product are non-flammability and harmlessness to gloves made of rubber and fabric.

MAGNESIUM STEP LADDER

(Use Key # 659 on Inquiry Card on page 73)

THIS new magnesium safety platform step ladder, offered by Abbeon Supply Co., has been designed to provide a broad working platform two feet from the top. In construction it is much like the standard magnesium step ladders and folds away with the same ease. The platform is ribbed and fluted to prevent skidding, thereby allowing the user to stand without tiring for long periods of time. There is complete freedom of movement and a person working on the ladder can use both hands in any direction.

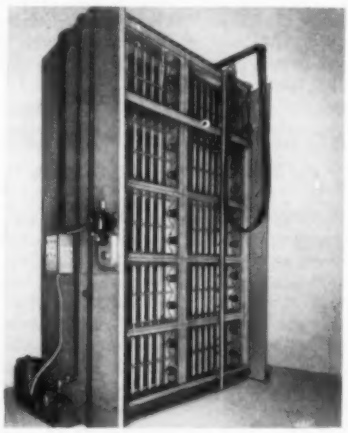
The ladders are light in weight and can be handled with ease by plant maintenance men and even by a stenographer or housewife. They fold compactly—require no additional storage space—are provided with hard-rubber, non-skid feet—conveniently placed bucket rack and a top tool rest. The ladder as illustrated is the 6′ overall size (4′ to height of platform), and weighs 12 lbs., while other sizes range from 4′ (2′ to platform) to 10′ (8′ to platform) and are correspondingly low in weight.

ELECTRONIC AIR-CLEANING UNIT

(Use Key # 660 on Inquiry Card on page 73)

A NEW low-cost electronic air-cleaning unit, the PX Precipitron®, is available from Westinghouse Electric Corporation. Combining 90 percent cleaning efficiency with a simple push-button method of spray-washing, the new unit cuts maintenance costs and eliminates inside-the-duct washing of cells.

Accumulated dirt on the electronic collector-plate surfaces of the unit is flushed



away by penetrating hot water from needle-spray nozzles attached to a motorized header. After moving slowly across the unit's face, the header automatically reverses and returns to the start position. The same traveling header applies an adhesive oil to the collector-plate surfaces when washing is completed. The oil binds collected dirt together and acts as a solvent for the wash operation.

Height and width of the unit depend on the cleaning requirements of a proposed system. Power packs and control units are located outside the duct. Typical installations will be found in industrial plants, office buildings, department stores, food processing plants, and hospitals.

CHEMICAL LEAK DETECTOR

(Use Key # 661 on Inquiry Card on page 73)

A NEW development on their Spray Stops—protective covers for flanges and valves in pipelines carrying corrosive chemicals, is announced by the Milsheff Corp. The devices were originally designed to protect personnel and equipment near pipeline joints by deflecting chemical leakage preventing burns to personnel and damage to equipment.

Now, after five years of research, in addition to the protective features, a supplementary coating has been added that shows a brilliant color change when hit by leaking chemicals . . . from a heavy stream down to a very fine spray. The highly visible color change, the company claims, allows chemical leaks to be caught and repaired before metal corrosion runs up heavy replacement costs and expensive down time.

The devices are weatherproof and fume proof. Even heavily contaminated air will not set off the color-change action. For special applications, however, where fume detection is important, before the liquid starts to leak, Spray Stops are available on which fumes alone will trigger the color change.

STRETCHER HAS ADJUSTABLE HANDLES

(Use Key # 662 on Inquiry Card on page 73)

A NEW model stretcher whose handles are adjustable is announced by the Washington Mortuary Supply Co. The Model 14 Adjusto Stretcher is equipped with wheels on one end and posts at the other. The telescoping extension handles are for the convenience of those carrying the stretcher. By pulling out the handles, the carriers are not close to the head and feet of the patient and one of the carriers can turn around and grasp the handles from behind to be able to walk in the same direction as the carrier at the other end.

The stretcher is of sturdy construction though light in weight, folds quickly and is very compact. It is available in different widths and lengths.

SELF-ADHERING TRAINING BOARD

(Use Key # 663 on Inquiry Card on page 73)

A NEW demonstration board for visual presentations, has been announced by The Ohio Flock-Cote Co. Called Visi-Graph, according to the manufacturer, it makes an excellent animated presentation for sales campaigns, meetings, research findings or new products. Tests have also shown that it's a vivid way of demonstrating safety campaigns, and explaining company policy to employees. Having no tacks, chalk, blackboard or glue, it's portable and easy to use.

The unit has a sturdy composition blackboard laminated with high quality Velourette flannel, and is used with the manufacturer's Velvette paper. One side of the paper has a self-adhering surface; the other side is coated with a velour finish made of rayon fibres. Displays are prepared by cutting the Velvette paper to size, peeling off the protective backing and pressing the self-adhering surface right on the back of a picture, diagram, chart or slogan. Then, as the speaker gives his presentation, he presses the Velour picture backs on the flannel board at just the right moment in his talk. The pictures or diagrams stay right on the board until he is ready to lift them off. Slogans, messages or charts fit right into his talk and retain his story, visually, before his audience. If the speaker is using small objects to illustrate his talk, he can press the actual objects on the board to give a three dimensional display effect.

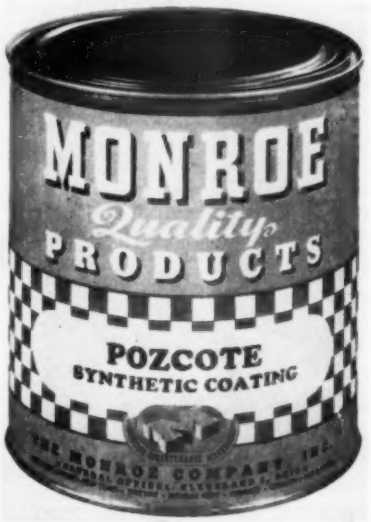
The board measures 36" x 48" and has a built in folding easel for table use. The whole unit weighs under 14 pounds and is easy to handle. The board's frame is natural kiln-dried poplar, treated with a wood preservative and the flannel surface is jet black.

INDUSTRIAL WARNING LIGHT

(Use Key # 664 on Inquiry Card on page 73)

A NEW electric signal light for use as a warning device in industry to indicate hazardous work areas, or as a visual communications light for noisy shops or long distances, has been produced by Federal Sign and Signal Corporation. Modeled after the company's revolving red flashing light used on fire, police and other emergency vehicles, the new Beacon Ray 27-S light uses the principle of a colored light beam revolving horizontally in a 360-degree arc, producing 100 brilliant flashes per minute.

The light is applicable for use in steel mills, foundries, machine shops, as a crossing warning light for in-plant railroad installations, for signalling on extremely long production lines, in lumbering, building and constructon projects, on farms and ranches, in shipyards, and in numerous other permanent or temporary locations. It is available with green, blue, amber and clear lenses, and may also have a red lens which is restricted to warning usage in locations not in conflict with official muncipal or governmental warning or emergency lights.



CORROSION-RESISTANT COATING

(Use Key # 665 on Inquiry Card on page 73)

NEW corrosion-resistant synthetic coating for wood, masonry and metal surfaces is announced by The Monroe Company, Inc. Known as POZCOTE, the coating contains inert synthetic resins and, unlike oil paints and varnishes, it is impervious to water, acids, alkalis, alcohol, syrups, oils and grease.

The company states that POZCOTE is tough and long wearing, and stands up as a floor coating under heavy trucking and foot traffic. It can be used indoors or out. Because of its elasticity, it will not crack or peel from temperature changes. Available in black, aluminum, clear, white and a complete assortment of colors, the new coating is recommended for floors, walls, woodwork, furniture, machinery and equipment. It is said to be especially advantageous for use in the presence of chemical fumes, food acids, moisture and high humidity.

What's YOUR Problem?

- **Has an accident or fire interrupted production?**
- **Want to know how to prevent it?**
- **Do you need background information on equipment for industrial safety, hygiene, or maintenance?**

As a service to its readers, "Safety Maintenance" will arrange to supply manufacturers literature on the following subjects. Just insert the key number on the Readers Inquiry Card on the opposite page and be sure to fill in your name and address. If you need information on a specific type of product, simply write it in on the Inquiry Card.

Key Number	Subject
101	Safety Goggles
102	Face Shields
103	Lens Cleaning & Anti Fogging Equipment
104	Sweatbands
105	Hard Hats
106	Respirators & Masks
107	Protective Clothing
108	Women's Protective Clothing
109	Safety Belts
110	Safety Gloves
111	Safety Toe Shoes
112	Safety Boots
113	Wooden Sole Shoes
114	Anti-Slip Soles
115	Oil-Proof Soles
116	Welding Helmets
117	Welding Curtains
118	Protective Skin Creams
119	Skin Cleansers & Soaps
120	Hand Drying Equipment
121	Sanitary Drinking Cups
122	Athlete's Foot Control
123	Salt Tablets
124	Noise Control
125	Antiseptic Medication
126	Burn Medication
127	First Aid Kits & Supplies
128	Stretchers & Litters
129	Resuscitators
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FREE BULLETINS & CATALOGS

As a convenience to executives, these new publications of manufacturers are offered by the Reader Service Department of SAFETY MAINTENANCE & PRODUCTION. To obtain copies write in the key numbers on the free-postage card below.

BUILDING MAINTENANCE

Floor Maintenance 439
Multi-Clean Products, Inc. 40-page booklet offers information on the care of asphalt tile, concrete, terrazzo and magnesite, rubber tile, wood and linoleum flooring. Characteristics and maintenance methods listed with recommended products. Also includes carpet shampooing and line of maintenance machines.

Protective Coatings 440
Magic Chemical Co. Catalog of bulletins contains complete details about abrasive and corrosion resistant plastic rubber coatings. Gives information about applications of the materials. Detailed instructions for use included.

Oil Absorbent 441
Wyandotte Chemicals Corp. Bulletin shows how absorbent, used around machinery and in other areas where moisture on floors creates a hazard, reduces slipping accidents and fire hazards. Absorbs oil, grease, water, paint, ink, food wastes, chemicals and other liquids. Easily applied and removed as it does not cake.

Spark-Resistant Flooring 442
The Master Builders Co. 12-page illustrated bulletin describes an iron-clad flooring that is static-disseminating, spark-resistant, non-combustible and wear resistant. Electrical conductivity is maintained under a wide range of temperatures. Contains specifications and testing data.

Floor Cleaner 443
G. H. Packwood Mfg. Co. Cleaner for grease, tar and oil stains on concrete floors covered in bulletin. Instructions for use given and harmlessness to floors pointed out. Used for recent or old stains.

ATMOSPHERE CONTROL

Spray Booths 444
Newcomb-Detroit Co. 12-page booklet features paint spray booth which draws air into the washing chamber at both the top and bottom of the water curtain, creating an even flow of air at the face of the booth and trapping a large amount of overspray in the spraying area. Complete specifications listed.

Ventilating Fans 445
Wind-Way Fan & Ventilator Co. Motor-operated window ventilating fans shown in bulletin. Ease of installation pointed out. Schematic diagram featured plus specifications. Guard assembly available.

Methane Indicator 446
National Mine Service Co. Bulletin describes portable methane indicator operating on the principle of optical projection. Allows readings to 0.1% on scale ranging from 0.0 to 0.6%. No recalibration necessary. Approved by U. S. Bureau of Mines.

MEDICAL

Ear Valve 447
Sigma Engineering Co. Bulletin pictures an ear valve which admits conversational tones but automatically closes to protect the ear from sudden, loud noises or the concussion from explosions. Fits comfortably into ear canal.

Fungicidal Solution 448
Onox, Inc. Folder shows how fungicidal solution used in conjunction with sponge rubber foot mat controls athlete's foot. Solution toughens the skin building up resistance to fungus attack.

Greaseproof Dressing 449
The Sealtex Co. Pamphlet shows how greaseproof dressing or bandage will stay on when exposed to machine oils, paint or lacquer thinners, gasoline, kerosene, naphtha, edible oils, soapy water and brine. Specific instances of use of product given.

PERSONAL PROTECTION

Welding Safety 450
Air Reduction Sales Co. Recommended safe practices in oxyacetylene and arc cutting and welding are offered in 32 page booklet. Illustrated, it details rules for personal safety, the handling and maintenance of equipment and safe practices in setting up, using, adjusting and shutting down equipment.

Headgear Combinations 451
Line of helmets and face shields worn in combination with protective caps outlined in bulletin. Shields and helmets feature an adjustable attachment to which any size cap may be clipped. Includes many styles of helmets and shields.

Visored Goggles 452
Mine Safety Appliances Co. Goggles which can be worn over spectacles and which have an opaque green visor for all-around protection shown in bulletin. Goggles have curved, one-piece lenses of tinted, impact resistant plastic, and the visor is ventilated.

Anti-Slip Soles 453
Avon Sole Co. Bulletin describes soles for boots and shoes which have concentric vacuum cups. The cups develop suction and provide positive traction on wet or slippery surfaces. Available in neoprene for wear around oil, gas, acids and chemicals.

Safety Spectacles 454
Willson Products, Inc. Line of safety spectacles pictured in bulletin. Various styles include plastic frames which are non-flammable, and metal frames, with or without side shields. Comfort and protection featured.

FIRE PROTECTION

Self-Closing Drum Cover 455
Protectoseal Co. Bulletin shows a self-closing drum cover with a fusible link. Covers are detachable and fit 30 and 55 gallon drums. Used steel drums can be equipped with the covers to make fire-safe containers. Installation instructions given.

Foam Fire Protection 456
National Foam System, Inc. 16-page booklet uses question and answer method to

(Continued on the next page)

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furnish basic information on mechanical and chemical foam and their devices. Non-technical. Most equipment approved by Underwriter's Laboratories.

Magnetic Separators 457
Eriez Mfg. Co. 7-page booklet describes a magnetic separator with a self-contained alarm device. Separator measures the amount of metal on the magnet and trips an alarm when the amount reaches a predetermined level.

MACHINERY MAINTENANCE

Safety Solvents 458
John B. Moore Corp. Folder lists line of safety solvents for a variety of cleaning purposes. Tabular form is used giving complete technical information on each solvent including recommended uses. Engineering service offered.

Small Parts Cleaner 459
The Kleer-Flo Co. Folder shows a pump driven, air agitated soaking tank accomodating two parts-baskets with a jet air gun for quick cleaning and drying. Has a fusible link cover to reduce fire hazard.

Centralized Lubrication Systems . 460
Farval Corp. Booklet presents several studies in centralized lubrication systems. Shows how automatic lubrication from a central reservoir provides efficient operation of machinery while effecting savings in time and cost.

MISCELLANEOUS

Aisle Markers 461
W. H. Brady Co. Vinyl plastic aisle markers that are applied without moistening subject of bulletin. Unaffected by oil, grease, moisture and truck and pedestrian traffic, they are available in several fade-proof colors and various sizes.

Wire Rope & Chain Fittings 462
The Thomas Laughlin Co. Complete 45-page illustrated catalog gives detailed information on safety clips, links, turnbuckles, hooks, sockets, thimbles, eye and ring bolts, shackles and swivels. Specifications given for all products.

Dock Bumpers 463
Bumpers, Inc. Bulletin describes rubber dock bumpers which can be installed on wood, steel or concrete to protect loading docks and trucks from damage caused by backing into the dock.

Safety Signs 464
Sargent & Sowell, Inc. Bulletin describes complete line of safety signs available in 4 sizes and in the color appropriate to the hazard. Signs may be engraved plastic or painted metal. Great variety of wordings shown.

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